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TRANSACTIONS

OF THE

MEDICAL ASSOCIATION

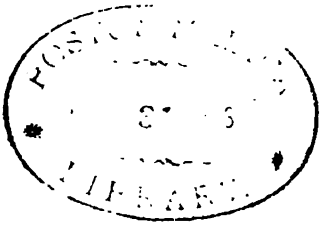
OF

GEORGIA

FIFTY-SEVENTH ANNUAL SESSION

1906

ATLANTA, GA.
PUBLISHED BY THE ASSOCIATION
1906



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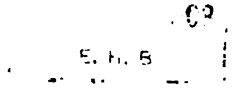

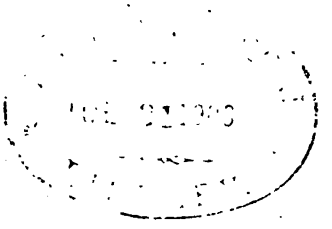

"RESOLVED, That this Association shall not be considered as indorsing views of authors of papers published in connection with the Transactions, unless definitely so indorsed in the Proceedings of the Association.

"RESOLVED, That the above resolution appear annually upon the title-page of our published Proceedings."

Transactions 1873.

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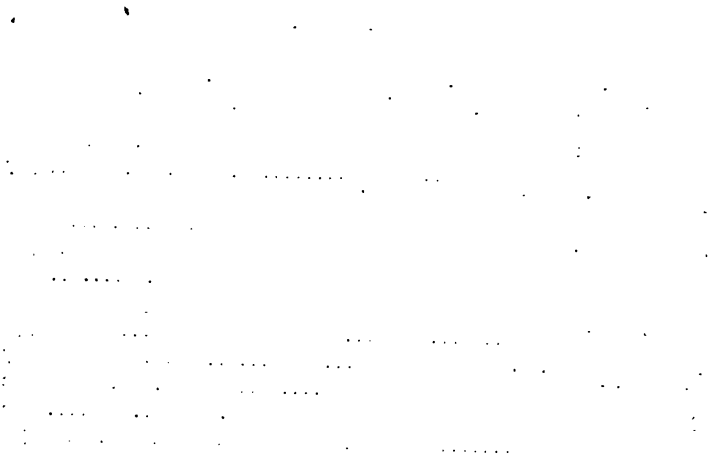
(*ex-officio.*)

CONTENTS.

	PAGE.
Officers	4
Annual Committees	5
Minutes	9
The Proper Management of Chronic Suppurative Inflammation of the Middle Ear. Dunbar Roy	39
Some Remarks on Chronic Conditions. H. McHatton	59
Needed Legislation on Pure Food Laws for Georgia. O. H. Buford	83
Radium F. G. Hodgson	88
Enteroptosis. L. Amster	101
The Treatment of Neuritis and Other Congestive Conditions with the Static Modalities. R. P. Izlar	108
Dementia Precox. J. W. Mobley	117
Anterior Poliomyelitis. J. Cheston King	130
A Case of Paramyoclonus Multiplex. E. Bates Block	136
Recent Studies in Rabies. James N. Brawner	140
The Specific Organism of Syphilis and a Simple Staining Method for Their Detection. C. R. Andrews	150
The Diagnosis and Treatment of Gallstones. George R. White	161
Differential Diagnosis of Gallstones. J. T. Rogers	177
Medical Ethics. M. A. Clark	193
The Treatment of Broncho-Pneumonia. Samuel A. Visanska	205
The General Practitioner as a Factor in Surgery. R. R. Kime	217
Report of a Case of Addison's Disease. Wm. Clifton Lyle	223
An Unusual Complication Following Typhoid Fever; Report of a Case. J. E. Sommerfield	231
Is There a Continued Fever Other than Malarial or Typhoid? J. W. Palmer	234
Nephritis—Its Treatment. A. P. Hanie	252
Treatment of Constipation. Theodore Toepel	265
Intussusception. Marion McH. Hull	276
Lesions Predisposing to Cancer. M. B. Hutchins	284
Report of Five Cases of Fracture of Femur, with Remarks on Treatment and an Exhibition of Mechanical Extension Apparatus. J. N. Downey	292
Appendicitis—General Observations—Statistics to Date. Floyd W. McRae	296
Vaginal Sarcoma in an Infant Seventeen Months of Age. O. L. Holmes	304

PAGE.
Antipyresis and Its Feasibility. Rembert H. Thigpen..... 312
The Early Diagnosis of Pulmonary Tuberculosis. T. E. Oertel.. 319
Diagnosis and Treatment of Pulmonary Tuberculosis. H. F. Harris 327
A New and Original Simplification of the Present Methods of Infant Feeding. Charles E. Boynton..... 343
The Prognosis in Chronic Nephritis. Claude A. Smith 357
Hyperemesis Gravidarum. Ralston Lattimore..... 364
When May We Advise Gonorrheal Patients to Marry. W. L. Champion 374
Gonorrhea. W. C. DeLamar..... 377
Circumcision. J. H. Crawford 382
Constitution and By-Laws. 389
Roll of Members..... 405



MINUTES

OF THE

Medical Association of Georgia.

Fifty-Seventh Annual Session.

FIRST DAY—MORNING SESSION.

AUGUSTA, GA., April 18, 1906.

The Association met in the Miller-Walker Hall, and was called to order by the President, Dr. W. Z. Holliday, of Augusta, at 10:45 a. m.

Prayer was offered by the Rev. Sparks W. Melton, D.D.

The President stated that the local Committee of Arrangements in providing for the exercises had cut out certain formalities, such as addresses of welcome, believing that these were unnecessary. He said it goes without saving that the members and their guests are cordially welcomed to our hearts and to our homes. With this introduction, the order of business was proceeded with.

Dr. William Clifton Lyle, Augusta, Chairman of the Local Committee on Arrangements, made the following verbal report:

The report of the Committee of Arrangements is practically incorporated in the official program of the Association. The meeting-place of the general Association will be in this hall (the

Miller-Walker Hall); the meeting-place for the House of Delegates is on the floor above, and the Council will hold its meetings in a room set aside for the purpose on this floor.

Owing to the length of the program, instead of having a smoker at the Country Club at 6 p.m., it was decided to have an evening session, and the smoker will be given at the Commercial Club, at 10 p.m., instead of at 6 p.m.

To-morrow evening (Thursday) the subscription dinner will be held at the Bon Air Hotel; price per plate, $1.25.

The Commercial and Country Clubs of the city extend the courtesies to all of the members, during the week, so that you are as much members of these various clubs as those who live here, and we will be glad for you to avail yourselves of the courtesies at our expense.

PROGRAMME.

WEDNESDAY, APRIL 18.

MORNING SESSION, 10 O'CLOCK.

Prayer, by the Rev. Sparks W. Melton, D.D.
Report of Committee on Arrangements.
Report of Committee on Necrology.
Report of Committee on Scientific Work.
Report of Secretary-Treasurer.
Special Reports.

1. The Treatment of Colds. Geo. Brown, M.D , Atlanta.
2. The Antrum and its Treatment, with Special Reference to Accessory Complications. Arthur G. Hobbs, M.D., Atlanta.
3. Mastoiditis and the Indications for Performing the Mastoid Operation. Frank M. Cunningham, M.D., Macon.
4. The Giant Magnet as an Eye-Preserver. Ross P. Cox, M.D., Rome.
5. A Report of Sixteen Hundred Cataract Operations. A. W. Calhoun, M.D., Atlanta.
6. The Proper Management of Chronic Suppurative Inflammation of the Middle Ear. Dunbar Roy, M.D., Atlanta.
7. Life Insurance Examinations: What Applicants Should be Admitted and what Rejected. W. S. Kendrick, M.D., Atlanta.
8. Some Remarks on Chronic Conditions H. McHatton, M.D., Macon.
9. Needed Legislation on Pure Food Laws for Georgia. O. H. Buford, M.D., Cartersville.
10. Radium. F. G. Hodgson, M.D., Atlanta.

11. Enteroptosis. L. Amster, M.D., Atlanta.
12. Gastric Ulcer: Its Diagnosis and Treatment. Wm. H. Moss, M.D., Atlanta.

AFTERNOON SESSION, 3:00 O'CLOCK.

13. The Treatment of Neuritis and Other Congestive Conditions with the Static Modalities. R P. Izlar, M.D , Waycross.
14. Dementia Præcox. J. W. Mobley, M.D., Milledgeville.
15. Anterior Poliomyelitis. J. Cheston King, M.D., Atlanta.
16. Paramyoclonus Multiplex, with Report of a Case. E. Bates Block, M D., Atlanta.
17. Recent Studies in Rabies. James N. Brawner, M.D , Atlanta.
18. Too Much Pathological Significance Attached to Findings of Albumin and Casts in the Urine. W. A. Mulherrin, M D., Augusta.
19. The Anatomy and Development of the Peritoneum and Abdominal Viscera. W. B. Armstrong, M.D., Atlanta.
20. A Simple Method of Staining Spirochetæ Pallida. C. R. Andrews, M.D , Atlanta.
21. The Diagnosis and Treatment of Gall-Stones. Geo. R. White, M.D., Savannah.
22. Differential Diagnosis of Gall-Stones. J. T. Rogers, M.D., Savannah.
23. Treatment to Prevent the Reforming of Gall Stones. F. B. Gregory, M.D., Lumpkin.
24. Syphilis Among Negroes and How to Better Their Condition. D. D. Quillian, M.D., Athens.
25. The Treatment of Broncho-Pneumonia. S. A. Visanska, M.D., Atlanta.
26. Light and Vibration, Mechanical and Chemical, as Therapeutic Agents. J. R. Sewell, M.D , Carrollton.

THURSDAY, APRIL 19.

MORNING SESSION, 10 O'CLOCK.

Reading of the Minutes.
Report of Special Committees.

27. A New Treatment of Typhoid Fever; Fifty-five Cases, no Deaths. Chas. Boyd, M.D., Bowen's Mill.
28. The Antiseptic and Eliminative Treatment of Typhoid Fever. J. B. Warnell, M.D., Register.
29. The Treatment of Typhoid Fever. S. E. Sanchez, M.D., Barwick.
30. The General Practitioner as a Factor in Surgery. R. R. Kime, M.D., Atlanta.

31. Report of a Case of Addison's Disease. Wm. Clifton Lyle, M.D., Augusta.
32. Is There a Continued Fever Other than Malarial or Typhoid? J. W. Palmer, M.D., Ailey.
33. Nephritis: Its Treatment. Arthur P. Hanie, M.D., Hartwell.
34. Antipyretics in Febrile Diseases Jas. B. Baird, M.D., Atlanta.
35. Arteriosclerosis. Eugene E. Murphey, M D., Augusta.
36. Arteriosclerosis and Its Relation to Bright's Disease. John W Daniel, M.D., Savannah.
37. Scabies; with Remarks upon the Present Epidemic. Bernard Wolff, M.D., Atlanta.
38. Uremia. I. H. Adams, M.D., Macon.
39. An Unusual Complication Following Typhoid Fever; Report of Case. J. E Sommerfield, M.D., Atlanta.
40. Treatment of Constipation. Theodore Toepel, M.D., Atlanta.

AFTERNOON SESSION, 3:00 O'CLOCK.

41. A Case of Popliteal Aneurysm Occurring in my Practice: Cure. J. C. Groves, M.D., Lincolnton.
42. Intussusception, with Special Reference to Diagnosis. Marion McH. Hull, M.D., Atlanta.
43. Treatment of Contracted Bladder. C. W. Strickler, M.D., Atlanta.
44. Report of Emergency Cases at Grady Hospital. L. T. Pattillo, M.D., Atlanta.
45. Clinical Consideration of Tumors; Report of Cases. W. F. Westmoreland, M.D., Atlanta.
46. The Influence of Respiration upon the Development of the Chest Deformity in Scoliosis and its Relation to the Application of the Plaster Jacket for the Correction of the Deformity. Michael Hoke, M.D., Atlanta.
47. Surgical Cases. W. H. Doughty, Jr., M D., Augusta.
48. The History of the Modern Method of Treating Penetrating Wounds of the Abdomen. Thos. R. Wright, M.D., Augusta.
49. Lesions Predisposing to Cancer. M. B. Hutchins, M.D., Atlanta.
50. Report of Five Cases of Fracture of the Femur, with Remarks on Treatment and Exhibition of Extension and Counter-extension Apparatus. J. N. Downey, M D., Gainesville.
51. Appendicitis. F. W. McRae, M.D., Atlanta.
52. Appendicitis. H. R. Donaldson, M.D., Atlanta.
53. Vaginal Sarcoma in an Infant Seventeen Months of Age. O. L. Holmes, M.D., Covington.
54. Some Remarks on the After-Treatment of Surgical Cases. Monroe Smith, M.D., Atlanta.

FRIDAY, APRIL 20.

MORNING SESSION, 10 O'CLOCK.

Reading of the Minutes.

Miscellaneous Business.

55. Post-Operative Phlebitis. J R. Garner, M.D , Atlanta.
56. Hernia: My Observations and Results. W. B. Crawford, M.D., Savannah.
57. Suggestive Therapeutics in the Practice of Medicine. G. T. Kesner, M.D , Decatur.
58. Antipyresis and its Feasibility. R. H. Thigpen, M.D., Augusta.
59. Tuberculosis. J. W. Hurt, M.D., Atlanta.
60. The Necessity for Early Diagnosis of Pulmonary Tuberculosis. T. E. Oertel, M.D., Augusta.
61. Diagnosis and Treatment of Pulmonary Tuberculosis. H. F. Harris, M.D., Atlanta.
62. Acidosis. W. R. Houston, M D., Augusta.
63. A New and Original Simplification of the Present Methods of Infant Feeding. Chas. E. Boynton. M.D., Atlanta.
64. Upon the Health of Our Children Depends the Future of the Nation. M. A. Purse, M.D., Atlanta
65. Three Months Colic in Babies. W. B. Parks, M.D , Atlanta.
66. The Prognosis in Chronic Nephritis. C. A. Smith, M.D , Atlanta.
67. Pneumonia, Carbonate of Ammonia in Same. H. L. McCrary, M.D., Royston.
68. Medical Ethics. M. A. Clark, M.D , Macon.

AFTERNOON SESSION, 3:00 O'CLOCK.

69. Cancer of the Uterus; Early Diagnosis. Geo. A. Wilcox, M.D., Augusta.
70. A Case Extraordinary of Laceration of Perineum with Loss of the Base of Bladder. J. G Earnest, M.D., Atlanta.
71. Dysmenorrhea in Young Women. Willis Jones, M.D., Atlanta.
72. Hyperemesis Gravidarum. Ralston Lattimore, M.D., Savannah.
73. Puerperal Eclampsia. Pryor W. Fitts, M.D., Greenville.
74. Criminal Abortion. E. Morgan, M.D., Arlington.
75. The Cystoscope and Its Uses. E. G. Ballenger, M.D., Atlanta.
76. When May We Advise Gonorrheal Patients to Marry? W. L. Champion, M.D., Atlanta
77. Gonorrhea. W. C. DeLamar, M.D., Mountain Hill.
78. Circumcision. J H. Crawford, M.D., Martin.
79. New Medical Era. J. G. Edie, M.D., Nashville.

The President then called for the regular order, the first being the Report of the Committee on Necrology,

which was read by Dr. Henry R. Slack, of LaGrange, Chairman.

REPORT OF THE COMMITTEE ON NECROLOGY.

The duties of the Committee on Necrology are sad and solemn. They begin where yours end—at death. They are nevertheless binding, and we believe that it is right and proper that a fitting memorial should be prepared and published in the Transactions for every member of this Association after life's fitful fires have ceased to glow.

"There is a reaper whose name is Death,
And with his sickle keen
He reaps the bearded grain at a breath,
And the flowers that grow between."

This reaper never tires, but fortunately his sheaves are not always full, and we have, so far as your committee has been able to learn, a smaller number of names to transfer from the active list to the In Memoriam than usual. They are:

Dr. DeSaussure Ford, Augusta.
Dr. Robert H. Hightower, Dublin.
Dr. Robert W. Hynes, Atlanta.
Dr. Alexander Mack, Decatur.
Dr. E. Morgan, Arlington.
Dr. D. D. Quillian, Athens.
Dr. I. A. Ketron, Clarkesville.

Your committee has endeavored to secure fitting memorials for these members, but has succeeded so far in securing only two. We have the promise of others, and request the privilege of having them published in the Transactions when received by the Secretary.

Respectfully, HENRY R. SLACK,
Chairman.

DR. D. D. QUILLIAN.

In the death of Dr. D. D. Quillian, which occurred at Athens, Ga., April 17, 1906, the medical fraternity lost a most talented and noble fellow worker. Daniel David Quillian was born in White county, Georgia, November 11, 1862. His ancestors were of the sturdy English and Irish stock whose main ambitions were the uplifting of humanity and the advancement of God's cause in this world. Dr. Quillian was raised on a farm, and received his primary education in the country schools of that time. In 1883 he entered the Sophomore class at Emory College, remaining there until 1885, when he was compelled to leave on account

of ill health. While at Emory he was prominent in college life, being a member of the Phi Delta Theta fraternity, besides winning for himself a speaker's place both years. In 1889 he graduated from the Atlanta Medical College, and immediately thereafter entered into the practice of the profession at Athens, Ga., where he remained until his death. In early life he joined the Methodist church, and was always a faithful and consistent member, being a steward at the time of his death. "He believed in the power of kindness, and spanned with divine sympathy the gulf that separates the fallen from the pure."

He was wise and successful in business, and the soul of integrity. He was full of charity and public spirit. He was a member of the I. O. O. F., a Mason, and a K. of P. He was stricken down in the midst of apparent vigorous manhood, when his life seemed most propitious, and when his usefulness to his race and profession seemed fairly in its prime. Few men are more devoted to the profession than was he—remarkably few so ready at all times and under all circumstances to respond to its exacting demands and to undergo its arduous labors. His success in life can only be attributed to his marked attention to detail, tireless energy, and unfaltering devotion to duty.

A wife and five children are left to mourn for an affectionate husband and a devoted father. The entire citizenry of Athens bow their heads in sorrow for the loss of one who gave the best years of his life that they and their loved ones might live.

The world is better for the life he lived, and his memory is a priceless legacy to his friends.

On motion, the report was adopted.

The next order was the Report of the Committee on Scientific Work.

The secretary said that the only work the committee did this year was the preparation of the program. In preparing the program, Dr. Harris and the secretary, the third member of the committee not being present, endeavored to classify the different topics on the program so far as practicable, so that papers on kindred subjects might be read and discussed together, and in this way save time. The committee felt that this was absolutely necessary, otherwise the Association would not be able to get through

with its work, considering the increased membership and the number of papers on the program.

The committee suggested that inasmuch as the election of officers is to occur at three o'clock on Friday afternoon, which will probably occupy the entire afternoon, that the papers set for Friday morning be taken up Thursday afternoon, if possible, and the program continued until nine o'clock, Thursday night. In this way the committee feels that the program can be finished by Friday. This, however, is merely a suggestion to dispose of as many papers as possible.

On motion, the report of the committee was accepted.

The Secretary-Treasurer presented his annual report, as follows:

REPORT OF THE SECRETARY-TREASURER, FOR THE YEAR ENDING APRIL 17, 1906.

During the year just closed there have been organized seventy-eight county societies in the following counties: Baldwin, Banks, Bartow, Berrien, Bibb, Butts, Calhoun, Clayton and Campbell, Carroll, Chatham, Cherokee, Clarke, Clay, Cobb, Colquitt, Coweta, Decatur, DeKalb, Dooly and Crisp, Dougherty, Douglas, Early, Elbert, Fannin, Fayette, Floyd, Forsyth, Franklin, Fulton, Glascock, Gordon, Greene, Gwinnett, Habersham, Hall, Hancock, Harris, Henry, Irwin, Jackson, Jefferson, Jones, Lincoln, McDuffie, Madison, Meriwether, Miller, Mitchell, Monroe, Muscogee, Newton and Rockdale, Dodge, Pulaski and Telfair, Oconee, Pickens, Pike, Polk, Putnam, Randolph, Richmond, Screven, Spalding, Stephens, Stewart and Webster, Sumter, Taliaferro, Terrell, Thomas, Tift, Troup, Turner, Twiggs, Upson, Walker, Walton, Ware, Warren, Washington, Wilkes, Worth. Six counties, having too small a number of physicians for independent organization, have united with an adjoining county, thus making eighty-four counties represented by seventy-eight societies. The number of members in good standing and who have paid their dues for 1906, in the counties named, is one thousand. In addition to this there are, in unorganized counties, between one and two hundred old members of the Association. These men are in good standing and will pay their dues to the general secretary-treasurer of the State body until an organization in their counties can be per-

fected. It is the expectation of the Council to get all the remaining counties in the State organized before the next meeting.

The work of organization being new to the Council as well as to the physicians at large, the work accomplished during the past year is most gratifying, and its good effect is already being felt by the profession.

The financial condition of the Association is shown by the following statement:

1905.			
April 17.	Balance in bank		$ 582 88
	Collected by L. H. J., 1905, dues		1,979 00
	Collected by County Secretaries for 1906		3,000 00
			$5,561 88
1905.			
April 22.	W. A. Starnes	$	5 00
May 12.	M. M. Johnson		3 00
" 12.	To desk		8 00
" 22.	" So. Ex. Co		3 23
" 31.	" B. L. Embry		3 00
June 3.	" So. Ex Co		2 62
" 3.	" Foote & Davies		131 70
" 3.	" Fielder & Allen		98 40
" 9.	" C. A. Smith (sten.)		100 00
" 9.	" J. P. Stevens Co		11 75
" 9.	" Constitutions and Charters		33 75
" 26.	" So. Ex. Co		3 15
Sept. 6.	" C. R. Barksdale		2 00
" 14.	" Transactions and stationery		1,069 69
Oct. 27.	" S. C. Benedict		17 20
1906.			
Jan. 2.	" Card Index		14 10
" 22.	" Express		1 45
" 25.	" 500 Co. Con		3 50
Mch. 15.	" C. W. Long mem		71 50
April 15.	" L. H. Jones, Sec		600 00
" 15.	" Stamps, exchange, telegrams, etc		98 55
			$2,281 59
" 17.	" balance in bank		3,280 29
			$5,561 88

Respectfully submitted.

LOUIS H. JONES,
Secretary-Treasurer.

On motion, the report of the Secretary-Treasurer was adopted.

Dr. M. A. Clark read the report of Business Transacted by the House of Delegates, as follows:

REPORT OF BUSINESS TRANSACTED BY THE HOUSE OF DELEGATES OF THE STATE MEDICAL ASSOCIATION AT ITS MEETING HELD AT AUGUSTA, GEORGIA, DECEMBER 17, 1906.

The meeting was called to order by President Holliday, and opened with prayer by Rev. Dr. Cree.

Dr. Willis Westmoreland: I move that the President appoint a committee of three, of which the Secretary shall be *ex-officio* a member, to go over the credentials of the delegates to this body.

(Motion seconded and adopted.)

The President then appointed Dr. Jones, the Secretary, Dr. Willis Westmoreland and Dr. T. E. Oertel as the Committee on Credentials.

Dr. Willis Westmoreland: I move that the committee just appointed report to the President to-morrow morning what counties are represented and what counties are not represented, and from that list the President can make his appointments of delegates to act for the unrepresented counties.

Dr. ————: To expedite matters, I offer as a substitute that the Secretary go on with the call of the roll.

Dr. M. A. Clark: I offer as a substitute for the whole that the members of the House of Delegates are vouched for, and that the Association is ready for busines.

(Substitute offered by Dr. Clark seconded and adopted.)

The Secretary having stated that twenty delegates were present, the President then announced that the House was ready for business.

Dr. Willis Westmoreland: I move that in counties where an organization has been chartered by this Association that the members of this Association shall be limited to the members of the chartered county organization, and that where there is no county organization the membership shall be limited to the previous members of the Association; in other words, that the Society shall not take in new members except through the regularly chartered county organizations.

(Motion seconded and adopted.)

Dr. Willis Westmoreland: I move that nobody be allowed to have the floor of this Association except regularly constituted members of the Association.

(Motion seconded and adopted.)

Dr. Willis Westmoreland: I move that the councilors and dele-

gates arrange their reports so they will be the first order of business in the morning or at the afternoon session; in other words, that all business shall be reported from the House of Delegates and from the Council to the Association as rapidly as completed or whipped into shape.

(Motion seconded and adopted.)

Dr. T. E. Oertel: I move that the House receive the reports from the Council.

(Motion seconded and adopted.)

Dr. M. A. Clark then made his report as chairman of the Board of Councilors, and reports were also made by Dr. Howkins, councilor from the First district; Dr. W. L. Davis, councilor from the Second district (read by Dr. Clark in the absence of Dr. Davis); Dr. Barnum, councilor from the Third district (read by Dr. Clark in the absence of Dr. Barnum); Dr. E. C. Davis, councilor from the Fifth district; Dr. M. A. Clark, councilor from the Sixth district; Dr. A. T. Calhoun, councilor from the Seventh district (read by Dr. Clark in the absence of Dr. Calhoun); Dr. Bloomfield, councilor from the Eighth district; Dr. Pilcher, councilor from the Tenth district. Dr. Clark, chairman of the Board of Councilors, stated that no reports had been received from Dr. W. L. Fitz, councilor from the Fourth district; Dr. Hardman, councilor from the Ninth district, or from Dr. Herrman, councilor from the Eleventh district.

Dr. Willis Westmoreland: I move that the House of Delegates thank the councilors for the good work they have done.

(Motion seconded and adopted.)

Dr. T. E. Oertel: I move the adoption of the report, and that the expense accounts of the councilors be paid by this Association.

Dr. Jones: I second Dr. Oertel's motion, with the additional proviso that these gentlemen submit a written statement of the actual expense account incurred in the matter of organization, and that the Secretary-Treasurer be then instructed by the House of Delegates to reimburse them for that expense.

(Dr. Oertel accepted the amendment, and the motion as amended was adopted.)

Dr. T. E. Oertel: Dr. Lyle has a resolution which he wishes to present to this body for their consideration, and I move that he be allowed to do so.

Dr. Jones: I move, as a substitute, that the Secretary be instructed to read the resolution.

(Substitute seconded and adopted.)

The Secretary then read the resolution presented by Dr. Lyle.

Dr. Willis Westmoreland: I move that the resolution be laid on the table.

(This motion receiving no second, the chair held that there was nothing before the house.)

Dr. T. E. Oertel: I move that the resolution be adopted and take the usual course or the proper course—the regular course.

(This motion receiving no second, the chair held that there was nothing before the house.)

Dr. McHatton: I move that this resolution be referred to the Committee on Public Policy and Legislation, with power to act.

(This motion received no second, and the chair held that there was nothing before the nouse.)

Dr. Jones: I will now make Dr. Westmoreland's motion to lay the resolution on the table.

(Motion seconded by Dr. Westmoreland adopted, and the resolution was laid on the table.)

Upon motion, the House of Delegates then adjourned.

On motion of Dr. Claude A. Smith, the report was adopted.

Under the head of Special Reports, the Committee on Tuberculosis asked for further time, which was granted.

At this juncture the reading of papers was proceeded with.

Dr. Dunbar Roy, Atlanta, read a paper entitled "Proper Management of Chronic Suppurative Inflammation of the Middle Ear," which was discussed by Drs. Williams, Ridley, Amster, Hiers, Smith, Slack, and, in closing, by the essayist.

Dr. H. McHatton, Macon, followed with a paper entitled "Some Remarks on Chronic Conditions."

This paper was discussed by Drs. Roy, Elkin, Hiers, Graham, Lattimore, Jones, Amster, King, Williams, Clark, Hardman, Block, Visanska, and the discussion closed by the essayist.

Dr. O. H. Buford, Cartersville, read a paper entitled "Needed Legislation on Pure Food Laws for Georgia."

Discussed by Drs. Slack, Graham, and, in closing, by the author of the paper.

On motion, the Association adjourned until 3 p. m.

AFTERNOON SESSION—FIRST DAY.

The Association reassembled at 3 p.m., and was called to order by the President.

Dr. R. P. Izlar, Waycross, asked that his paper, entitled "Treatment of Neuritis and Other Congestive Conditions with the Static Modalities," be read by title and referred to the Committee on Publication.

On motion, action was so taken.

Dr. J. W. Mobley, Milledgeville, read a paper entitled "Dementia Precox," which was discussed by Drs. Cooley, Block, and, in closing, by the essayist.

Dr. J. Cheston King, Atlanta, followed with a contribution entitled "Anterior Poliomyelitis."

Discussed by Dr. Daniel, and, in closing, by the essayist.

Dr. E. Bates Block, Atlanta, read a paper on "Paramyoclonus Multiplex, with Report of a Case."

Dr. James N. Brawner, Atlanta, contributed a paper on "Recent Studies in Rabies."

This paper was discussed by Drs. Slack, Smith, and the discussion closed by the essayist.

Dr. C. R. Andrews, Atlanta, read a paper entitled "A Simple Method of Staining Spirochetae Pallida."

Discussed by Drs. Harris, Hodgson and Goldsmith.

Dr. George R. White, Savannah, read a paper on "The Diagnosis and Treatment of Gall-Stones."

Dr. J. T. Rogers, Savannah, read a paper on "Differential Diagnosis of Gall-Stones."

These two papers were discussed jointly by Drs. Daniel, Graham, Slack, Amster, Goldsmith, McHatton, Williams, Williams (Howard J.), Doughty, and, in closing, by Dr. White.

On motion, the Association adjourned until Thursday, at 10 a.m.

SECOND DAY—MORNING SESSION.

The Association met at 10 a.m., and was called to order by the President.

Dr. T. E. Oertel, Augusta, presented the following report of the Committee on Tuberculosis:

REPORT OF THE COMMITTEE ON TUBERCULOSIS.

To the Medical Association of Georgia.

MR. PRESIDENT AND GENTLEMEN: Your Committee on Tuberculosis have to report as follows:

Following your instructions the committee has been enlarged by the appointment of a member from each county in the State, except in a few instances where there was no member of the Association in a given county. The total membership of the committee is now 127, quite a creditable anti-tuberculosis society within the Association.

A meeting of the committee was held in Macon, October 24, 1905, at which there was a good attendance.

It was decided at this meeting to institute local anti-tuberculosis committees by requesting each county society to appoint such to prosecute the work in their respective localities.

It was also decided to endeavor to secure the cooperation of the authorities of the public schools, and the members of the committee were instructed whenever possible to deliver lectures to the teachers of the schools in their districts.

The original committee of five have been constituted an executive body.

The committee take pleasure in reporting that the following resolution was on behalf of your committee introduced in the Legislature during its last session and passed both Houses:

"JOINT RESOLUTION IN FAVOR OF A COMMITTEE TO CONSIDER THE QUESTION OF A STATE SANATORIUM FOR CONSUMPTIVES.

Resolved, By the Senate and House of Representatives in General Assembly convened, That the Governor be, and is hereby authorized and instructed to appoint a committee consisting of three members, one of whom shall be the Secretary of the State Board of Health; the other two to be designated for appointment by the Council of the Medical Association of Georgia, to consider the question of a State sanatorium for consumptives, and that they shall report to the next Legislature the best location for and

probable cost of erection and maintenance of such an institution, together with such recommendations as they deem proper (the report to be submitted to the Legislature sometime during the first six days of the session), the committee to serve without pay, except actual necessary expenses, which shall be paid from money in the treasury not otherwise appropriated, and the Governor is hereby authorized to draw his warrant for the same."

The Council presented to the Governor for appointment on the commission the names of Drs. L. G. Hardman and T. E. Oertel, and these gentlemen have been appointed, and with Dr. H. F. Harris, Secretary of the State Board of Health, constitute the commission. This commission will report to the next meeting of the Legislature as above.

If the report is in favor of the erection of a State sanatorium for tuberculosis, your committee would respectfully suggest that the personal effort of each member of this Association be expended looking towards the passage of such a bill as may be recommended.

With unity of action we may accomplish much. We would urge upon the county societies the necessity of adopting the suggestion of your committee relative to the appointment of local committees on tuberculosis within these bodies to take up this question in their own districts and prosecute the work there.

It would be of great benefit if at each meeting of the Association we could have a tuberculosis exhibit which would be open to the general public and one or more free lectures in language which every one could understand.

Such exhibits have proven of great value elsewhere and can not fail to be of benefit with us.

Being entirely without funds, except those few dollars which the individual members of your committee have been able to collect or have themselves contributed, it is quite impossible to provide for such an exhibit at present.

The board of directors of the National Association for the Study and Prevention of Tuberculosis have adopted an amendment to the by-laws providing for the organization of an advisory council.

Among others who are eligible for this council are "officers or representatives appointed by various recognized State Associations for the prevention of tuberculosis, such representatives being required to qualify as members of the National Association, the number in any case not to exceed five."

Your committee recommend that being virtually a State organization for the prevention of tuberculosis they may be authorized and instructed to affiliate with the National Association and to seek representation upon the advisory council under the above provision.

In conclusion, your committee earnestly request the hearty co-operation of each member of this Association in the work which you have made our special care.

Only by systematic and united effort can we hope to prosecute a winning fight against the *great white plague.*

Respectfully,

T. E. OERTEL, Chairman.

M. A. CLARK, Secretary.

On motion of Dr. Williams, the report was adopted, and ordered published in the Transactions.

The report of the Committee on Education was called for, and was read by Dr. R. R. Kime, of Atlanta, as follows:

REPORT OF THE COMMITTEE ON EDUCATION.

Mr. President:

Your Committee on Education desires to report as follows. We recommend:

First. Two sessions each school day from 8.30 a.m. to 12 m., and from 1.30 to 4 p.m. as best for the physical, mental and moral development of the child.

Second. A reduction of the number of pupils to a maximum of forty (40) to each teacher, which with two school sessions will give more time for study periods in school and materially lessen work and give the teacher time to instruct pupils how to study.

Third. A reduction in the number of studies in the schools, leaving out such studies, or parts of same, as will not be of practical benefit later in life.

Fourth. We specially recommend medical inspection of schools in all cities of ten thousand population and over in order that thereby more attention may be given to the physical development of the child.

Fifth. That in school buildings more attention be given to light, ventilation, sanitary surroundings and all other hygienic conditions.

Sixth. That more attention be given to the school furnishings, especially that the seating be properly adjusted to the size of the children, and in proper relation to light and ventilation.

In regard to the second subject assigned us, "When and how should boys and girls be instructed as to social purity and the social vices?" we find it difficult to reach a direct conclusion because of our present ideas and customs in regard to this subject, so that we feel before our instructions in this line can be made effective, some changes will have to be made.

First. The old idea that "a boy must sow his wild oats" is illogical and productive of evil. There is but one answer to this question, "Whatsoever ye sow that shall ye reap," and doubly so when sown in the formative stage of life.

Second. If the woman must be pure so should the man if the offspring is to be pure physically, mentally and morally. On this subject we quote (Morrow Diseases of Marriage): "So long as men may, without scruple, without violation of social laws, with what we might almost term tacit encouragement of society, freely consort with immoral women without incurring any sort of social stigma, so long will they continue to infect the innocent women they marry with diseases which soil them, which poison them, and which kill them."

Third. The idea of some that continence on the part of man is incompatible with health is productive of much evil and should be condemned.

On this subject the Society of Sanitary and Moral Prophylaxis has passed the following resolution and request the Medical Association of Georgia to pass the same and instruct their delegates to the American Medical Association to vote for the same:

"*Resolved*, That this society believes that continence is compatible with health and reprobate the contrary doctrine as a menace to the physical and moral welfare of the individual and of society."

As to instructions on these lines we advise:

First. That proper instructions as to sexual hygiene and social purity be given in the high schools and colleges to boys and girls separately.

Second. This we believe can best be done by properly written pamphlets to meet the requirements of both sexes separately and placed in the hands of teachers and parents.

DR. R. R. KIME,
DR. DUNBAR ROY,
DR. THEO. TOEPEL,
Committee.

It was moved that the report be accepted. Seconded.

A member asked for an expression of opinion concerning the writing work in schools, as he knew that there were oculists and physicians present who could give an expression of opinion on the effect of so much writing work in schools. He did not think the report touched that point.

Dr. T. Toepel said that usually there was insufficient light in schoolrooms, which was really the cause of so many children being affected with eye diseases. However, there seems to be a tendency among the school authorities now to provide for each room a certain amount of light, so that every child received a certain amount of light, air space and floor space. This is the only way to overcome the difficulties now existing in schoolrooms. It should not be to see how many children a teacher can instruct, but how well and how comfortable the child can be made while in the schoolroom. The sanitary committees and committees on hygiene of the different cities, particularly the authorities in charge, should see to it that if a schoolroom is built for forty children, they should not put forty-one in it, or if a schoolroom is built for fifty, they should not attempt to crowd sixty into it.

Dr. M. B. Hutchins thought that the committee left out an important thing. He did not know how it was in other cities in Georgia, but he believed ninety per cent. of the little schoolgirls in Atlanta stooped badly. They walked around with their backs doubled up. He did not know whether this was laziness or not. He was inclined to think, however, that it was due to the arrangement of the school seats and desks. He thought this was more important than some of the other matters brought up in the report.

Dr. C. M. Curtis said it occurred to him from observation that the school seats and patent desks which were used almost exclusively now in schools were gotten up with the idea of cheapness rather than that of comfort.

Dr. R. R. Kime said the committee would like the privilege of including in the report what was said with reference to seats in schoolrooms. The committee would also like the consent of the Association to incorporate

other points mentioned in the report, if it was agreeable.

As there was no objection offered to this, this privilege was granted to the committee.

The President then put the motion, and the report of the Committee on Education was adopted.

Dr. W. B. Hardman, Commerce, moved that the Secretary be instructed to send Dr. Charles Hicks, of Dublin, a telegram, expressing the sympathy of the Association in his time of affliction and inability to attend the meeting. Also on account of the death of Dr. D. D. Quillian, one of the prominent members of the Association, that the Secretary be instructed to send a telegram of condolence to his wife.

The motion was seconded and carried, and the Secretary was so instructed.

Dr. S. A. Visanska, Atlanta, read a paper on "Treatment of Broncho-Pneumonia," which was discussed by Drs. Williams, Kendrick, Duncan, Curtis, Oliveros, Holmes, and, in closing, by the essayist.

Dr. J. E. Sommerfield, Atlanta, read a paper entitled "An Unusual Complication Following Typhoid Fever; Report of a Case."

Dr. J. W. Palmer, Ailey, followed with a paper on "Is There a Continued Fever other than Malarial or Typhoid?"

These two papers were discussed by Drs. McHatton, Hermann, Curtis, Thrash, Jones, Duncan, McArthur, Graham, Kime, and the discussion closed by Dr. Palmer.

Dr. R. R. Kime, Atlanta, read a paper on "The General Practitioner as a Factor in Surgery."

Dr. William Clifton Lyle, Augusta, read a paper entitled "Report of a Case of Addison's Disease," which was discussed by Drs. Williams and Block.

Dr. Arthur P. Hanie, Hartwell, read a paper on "Nephritis; Its Treatment."

Discussed by Drs. McRae, Block, Duncan and Daniel.

On motion of Dr. Clark, the Association adjourned until 3:30 p.m.

HOUSE OF DELEGATES.

The House met at 2 p.m., Thursday, April 19th, and was called to order by the Secretary, in the absence of the President.

On motion of Dr. Jones, Dr. F. W. McRae was asked to take the chair.

Dr. M. A. Clark reported on behalf of the Council, as follows:

REPORT OF THE COUNCIL.

The Council begs leave to report that it has audited the report of the Secretary-Treasurer, and has found it correct.

We wish to recommend the following:

Considering the fact that the Secretary-Treasurer has much more work to do under the present plan, we recommend that his salary be increased from $600.00 to $1,000.00.

It was moved that the report of the Council be adopted.

Seconded and carried.

Dr. Jones thanked the House of Delegates for their appreciation of his work.

The Secretary read the resignation of Dr. W. L. Davis, Councilor of the Second District.

On motion of Dr. Howard J. Williams, the resignation was accepted.

The Secretary read the following from the Spalding County Medical Society:

In view of the custom that prevails under the present law of the State of Georgia of requiring practicing physicans to attend court as witnesses in unimportant cases, of criminal violation of

the law, at a great sacrifice of time, and often to the neglect of their professional duties and obligations to the sick, as well as to their great financial sacrifice; therefore, be it

Resolved, by the Medical Association of the State of Georgia, That in justice to suffering humanity, as well as to the interest of the members of the medical profession, that the State Legislature should create a law to provide some compensation to physicians when detained under summons as witnesses in all criminal cases by the courts of the State. Be it further

Resolved, That the Committee on Legislation of the Georgia Medical Association be requested to prepare a suitable bill for the protection of the members of the medical profession, and provide compensation per day for the detention of its members when used as expert witnesses, or in all criminal cases.

On motion, this communication was referred to the Committee on Medical Legislation.

The Secretary presented the following from the Fulton County Medical Society:

The Legislative Committee of the Fulton County Medical Society desires to call the attention of the House of Delegates of the Medical Association of Georgia to the fact that we understand a bill will be introduced at the coming session of the Legislature, looking to the registration of properly qualified trained nurses.

We respectfully suggest that the House of Delegates endorse the effort to raise the standard and regulate the practice of nursing.

L. B. CLARK, Chairman.
F. W. MCRAE,
J. R. SIMPSON,
M. B. HUTCHINS,
Committee on Legislation.

On motion of Dr. Williams, this communication was endorsed and referred to the Committee on Medical Legislation.

The following preamble and resolutions were presented with reference to the Hepburn bill:

WHEREAS, It has been brought to the attention of this body that there is a pure food bill at present before the Congress of the United States, known as the Hepburn Bill, and,

WHEREAS, This bill meets with the approbation of this body, representing the medical profession of the State of Georgia; therefore, be it

Resolved, That the Senators and Representatives in Congress from the State of Georgia be earnestly requested to vote for the said bill, and that they use all their influence to further the passage of said bill.

Resolved, That the Secretary of this Association be instructed to furnish each Senator and Representative from this State with a copy of these resolutions.

On motion, the resolutions were unanimously adopted.

Dr. Howard J. Williams offered the following resolution:

Resolved, That it is the sense of this Association that the minimum fee for life insurance examinations should be five dollars ($5.00).

After some discussion by Drs. White, Jones, Clark, and McRae, the resolution was unanimously adopted.

Dr. H. A. Herrman offered the following from the Washington County Medical Society, which was referred to the Committee on Medical Legislation:

At a meeting of the Washington County Medical Society, held in Sandersville, on April 17, 1906, the following was introduced by Dr. D. L. Cheatham, and passed by unanimous vote:

"WHEREAS, There has prevailed in many sections of this State during the six years just passed an epidemic of smallpox; and

WHEREAS, Many counties and towns of this State have taken very mild, if any, measures to stamp out that disease; and

WHEREAS, The consensus of medical opinion of the world is that proper vaccination is the only preventive means; and

WHEREAS, There seems no efficient means now of enforcing compulsory vaccination in this State; therefore

Resolved, That this Society, through its Secretary, urges the Medical Association of Georgia to take necessary steps to have introduced and passed by the next General Assembly a law making it a misdemeanor for any person to teach in any school in this State without having been successfully vaccinated; or to allow the attendance of any pupil in any school in this State without having been successfully vaccinated, or two unsuccessful

attempts to secure same having been made within one year; provided that said law shall not apply to any teacher or pupil in a school not receiving its support in whole or in part from the funds of the State. That it shall be required of the Judges of the Superior Court to give this law in charge to the grand juries at the meeting of the Spring Term in each county.

H. A. HERMANN, Secretary,
Washington County Medical Society."

On motion, the House of Delegates then adjourned, subject to the call of the President.

AFTERNOON SESSION—SECOND DAY.

The Association reassembled at 3:30 p.m., and was called to order by the President.

Dr. Theodore Toepel, Atlanta, read a paper on "Treatment of Constipation."

Dr. Marion McH. Hull, Atlanta, read a paper on "Intussusception, with Special Reference to Diagnosis."

Discussed by Dr. McRae.

Dr. F. W. McRae, Atlanta, read a paper entitled "Appendicitis, General Observations, with Operative Statistics to Date."

Dr. O. L. Holmes, Covington, read a paper on "Vaginal Sarcoma in an Infant, Seventeen Months Old."

Dr. Michael Hoke, Atlanta, followed with a paper entitled "The Influence of Respiration Upon the Development of the Chest Deformity in Scoliosis and Its Relation to the Application of the Plaster Jacket for the Correction of the Deformity."

Discussed by Dr. Thrash, and, in closing, by the essayist.

Dr. W. H. Doughty, Jr., Augusta, contributed a paper entitled "Surgical Cases."

Dr. Eugene E. Murphey, Augusta, read a paper entitled "Arteriosclerosis."

Dr. John W. Daniel, Savannah, read a paper on "Arteriosclerosis in Its Relation to Bright's Disease."

These two papers were discussed together by Drs. Kendrick, Duncan, Holmes, and, in closing, by the essayist.

Dr. M. B. Hutchins, Atlanta, read a paper on "Lesions Predisposing to Cancer," which was discussed by a member, and, in closing, by the essayist.

On motion of Dr. Jones the Association then adjourned until 10 a.m., Friday.

THIRD DAY—MORNING SESSION.

The Association met at 10: 30 a.m., and was called to order by the Secretary, in the absence of the President, and of the Vice-Presidents.

Dr. W. S. Elkin moved that Dr. F. W. McRae take the chair, pending the arrival of the President. Carried.

Dr. M. A. Clark presented the report of the House of Delegates. (See page 18.)

On motion of Dr. McHatton, the report of the House was unanimously adopted.

Dr. W. S. Elkin suggested that the Association donate $100.00 for the benefit of the San Francisco sufferers. He thought it would be nothing but right for the Association to telegraph $100.00 to the physicians of that stricken city, one which had recently been afflicted by an earthquake. He suggested that the Council be instructed to contribute this sum, and that it be sent at once through the Secretary of the Association.

The suggestion was seconded, and the motion carried.

The Secretary stated that the reading of the minutes had not been customary, and it was practically an impossibility for the official stenographer to furnish daily minutes of the enormous amount of notes taken by him. He

thereupon moved that the reading of the minutes be dispensed with, and that the report, as furnished by the official stenographer in typewritten form, be considered the official minutes of the Association, and be published in the Transactions in that form.

Dr. M. A. Clark said, as a matter of fact, no minutes should be read before the general body. Reading of the minutes and reports of committees should be before the House of Delegates, and then the action of the House of Delegates simply reported back to the Association.

Seconded and carried.

At this juncture, it was moved that the election of officers be set for two o'clock, Eastern time. Seconded.

The President ruled that it would require unanimous consent to change the order of business.

Dr. Hardman said the time of election was provided for in the Constitution, and it could not be changed.

The President ruled that this point was well taken.

Dr. R. H. Thigpen, Augusta, read a paper entitled "Antipyresis and Its Feasibility."

Dr. T. E. Oertel, Augusta, read a paper on "The Necessity of Early Diagnosis of Pulmonary Tuberculosis."

Dr. H. F. Harris, Atlanta, followed with a paper entitled "Diagnosis and Treatment of Pulmonary Tuberculosis."

These papers were discussed jointly by Drs. Thrash, McHatton, Block, Jones, and, in closing, by the essayists.

Dr. Charles E. Boynton, Atlanta, read a paper entitled "A New and Original Simplification of the Present Methods of Infant Feeding."

Discussed by Dr. Clark, and, in closing, by the essayist.

Dr. Claude A. Smith, Atlanta, read a paper on "The Prognosis in Chronic Nephritis."

Discussed by Dr. Williams.

Dr. M. A. Clark, Macon, read a paper on "Medical Ethics," which was discussed by Drs. Lattimore, Hardman, McArthur, and, in closing, by the essayist.

On motion, the Association adjourned until 3 p.m.

HOUSE OF DELEGATES.

The House of Delegates met at 2 p.m., with Dr. F. W. McRae in the chair.

Dr. M. A. Clark reported for the Council relative to the suggestion or motion of Dr. Elkin that after due deliberation the Council think it unwise to appropriate $100 from the funds of the Association for the suffering physicians in San Francisco. The Council recommend that the amount be taken up by individual subscription. Accordingly, the Council have subscribed $10.00.

On motion of Dr. Jones, the report of the Council was adopted, and the Secretary instructed to send the funds to some member of the medical profession in San Francisco for proper distribution.

The Secretary read the following:

Resolved, That a bill be introduced at the session of the next Legislature amending the bill creating State Boards of Medical Examiners, which shall give said Boards the right to revoke licenses for cause.

JOS. EVE ALLEN,
Dean Medical Department University of Georgia.
E. C. THRASH,
Professor Path. and Bact., Atlanta School of Medicine.
W. S. KENDRICK,
Professor Pract. Med., Atlanta School of Medicine.
J. B. S. HOLMES,
President State Board of Medical Examiners.
W. D. TRAVIS,
Vice-President.
FRED. D. PATTERSON,
Member Reg. Board of Medical Examiners.
W. S. ELKIN,
Dean, A. C. P. and S.
WM. PERRIN NICOLSON.

On motion, the resolution was referred to the Committee on Medical Legislation, with the recommendation that such a bill be drafted and introduced at the next session of the legislature.

Dr. M. A. Clark presented the following resolution:

Resolved, That all cases of illegal practice of medicine be referred to the councilors of the respective districts, and that it shall be their duty to do all in their power to secure conviction and punishment of said offenders.

JOS. EVE ALLEN,
Dean Medical Department, University of Georgia.
W. S. KENDRICK,
Professor Pract. Med., Atlanta School of Medicine.
E. C. THRASH,
Professor Path. and Bact., Atlanta School of Medicine.
J. B. S. HOLMES,
President State Board of Medical Examiners.
W. D. TRAVIS,
Vice-President State Board Reg. Medical Examiners.
FRED. D. PATTERSON,
Member State Board Examiners.
W. S. ELKIN,
Dean A. C. P. and S.
WM. PERRIN NICOLSON.

After some discussion, this resolution was laid on the table.

Dr. T. E. Oertel offered the following amendment to the Constitution:

ARTICLE IX., SECTION 3. Strike out "and without nomination," and insert "upon nomination of the House of Delegates, no member of the House of Delegates to be eligible for office of President." (To lie over one year.)

Dr. M. A. Clark stated that in the new Constitution no provision is made for honorary members. Provision should be made for them, and County Medical Societies should be allowed to have honorary members.

The President said that unless there is objection on

the part of any member of the House of Delegates, Dr. Clark would prepare such an amendment as was necessary, to lie over until next year, but submitted to the Secretary for publication in the Transactions.

It was suggested that the names of honorary members submitted be published in the Transactions this year.

There being no further business to come before the meeting, the House of Delegates then adjourned *sine die.*

AFTERNOON SESSION—THIRD DAY.

The Association reassembled at 2 p.m., and was called to order by Dr. F. W. McRae, in the absence of the President.

Dr. M. A. Clark reported the action taken by the House of Delegates with reference to the suggestion of Dr. Elkin, to appropriate $100.00 for the sufferers in San Francisco. (See report of House of Delegates, page 34.)

On motion, the action of the House of Delegates was concurred in.

ELECTION OF OFFICERS.

The election of officers was proceeded with.

The President appointed as tellers Drs. J. W. Palmer, J. Lawton Hiers, W. W. Pilcher and E. C. Davis.

The result of the election was as follows:

President, Dr. H. H. Martin, Savannah.

First Vice-President, Dr. T. E. Oertel, Augusta.

Second Vice-President, Dr. J. W. Palmer, Ailey.

Councilors: Second District, Dr. F. G. Patterson, Cuthbert.

Ninth District, Dr. W. B. Hardman, Commerce.

Tenth District, Dr. W. W. Pilcher, Warrenton.

Eleventh District, Dr. J. D. Herrman, Eastman.

Delegates to the American Medical Association: Dr. T. D. Coleman, Augusta; Dr. George R. White, Savannah, and Dr. H. F. Harris, Atlanta.

The newly-elected President was escorted to the platform, and, after being introduced by the retiring President, said: I am sure the honor that has been conferred upon me is greater than I can express in words or than anybody can express for me. I shall endeavor to the best of my ability to be a worthy successor of your retiring President. (Applause.)

Dr. J. S. Howkins, Savannah, said he had been instructed by the city of Savannah to extend an invitation to the Association to hold its next annual meeting there.

It was moved by Dr. T. E. Oertel, and seconded, that the Association hold its next annual meeting in Savannah. Unanimously carried.

The following papers were read by title, and referred for publication in the Transactions:

"Radium," by Dr. F. D. Hodgson, Atlanta.

"Enteroptosis," by Dr. L. Amster, Atlanta.

"Report of Five Cases of Fracture of the Femur, with Remarks on Treatment and Exhibition of Extension and Counter-Extension Apparatus," by Dr. J. N. Downey, New Holland.

"Tuberculosis," by Dr. J. W. Hurt, Atlanta.

"A Case of Laceration of the Perineum, with Loss of the Base of the Bladder," by Dr. J. G. Earnest, Atlanta.

"Hyperemesis Gravidarum," by Dr. R. Lattimore, Savannah.

"When May We Advise Gonorrheal Patients to Marry?" By Dr. L. Champion, Atlanta.

Dr. E. C. Thrash, Atlanta, moved that a vote of thanks be extended to the physicians and citizens of Augusta for the cordial and hospitable manner in which the members

and guests have been entertained during their stay in Augusta.

This motion was seconded and unanimously carried.

The Secretary said that all papers, whose authors were present, but were not read, would be read by title, and published in the Transactions. A motion to this effect was made and carried.

On motion, the Association then adjourned, to meet in Savannah, 1907.

THE PROPER MANAGEMENT OF CHRONIC SUPPURATIVE INFLAMMATION OF THE MIDDLE EAR.

By DUNBAR ROY, M.D., Atlanta.

A chronic discharge from the ear is no longer looked upon as a "necessary evil," it matters not what may be the character of the secretion. What cures of this condition that can not be accomplished by local and constitutional therapeutic measures can be accomplished by surgical intervention. Chronic middle ear suppuration should be placed in the same category as chronic appendicitis, and like the latter, should receive the same kind of treatment. The general public has become educated upon the necessity of being operated upon for appendicitis, while chronic fetid suppuration from the middle ear they look upon as of no consequence, failing to realize that such patients are calmly resting upon a smoldering volcano which at any time may develop into a sinus thrombosis or a brain abscess, to be followed quickly by death, and in many cases the cause incorrectly stated upon the burial certificate.

Fetid discharge from the ear has been the *bete noir* of the general practitioner, and even of the specialists for years past, but in the recent development of aural surgery, as exemplified by Schwartze and Stacke, this condition need no longer be allowed to run its indeterminable course, undermining the health of the patient, but by a thorough and radical operation this pathological condition can be removed and the discharge cured.

Allow me to make myself clear as to the meaning of a chronic discharge from the middle ear. There are two kinds of chronic discharges: 1. A catarrhal, mucoid secretion, free from odor except when the ear has not been cleansed for some time, coming from the middle ear through a perforation in the drum, associated with the same kind of catarrhal secretion in the nose and nasopharynx. This condition can nearly always be cured by local therapeutic measures directed to both the ear and the nasal mucous membrane. This form of middle ear discharge is frequently seen in children, especially those with adenoids in the nasopharynx, and in those recovering from measles and scarlet fever. Proper and thorough treatment of this form will produce a cure, frequently the only thing necessary being the removal of the adenoids. However, if the condition is not treated, it will pass into the next form, of which especially I wish to speak.

2. Discharge from the middle ear, of whitish desquamated epithelium, with purulent fetid secretion, destruction of the drum membrane, and in many cases erosion and liquefaction of the auditory canal at the point where the drum should exist. This is the form that must usually be designated as chronic, and is the form nearly always existing if over a year in duration.

All chroi 'c suppurative discharges must have previously been acute in character, but whether due to neglected treatment at the time or to some inherent constitutional dyscrasia, such is frequently hard to decide. There is always some reason why one child suffers with a chronic discharge for months and years, from the middle ear, following an attack of measles or scarlet fever, while another child will have equally as severe an acute condition, and yet the discharge will cease in a few weeks. In such cases as the former, I have never failed to find some

hereditary systemic dyscrasia, it matters not what we call it, whether inherited syphilis, scrofulosis, tuberculosis, cretinism, chronic adenitis, etc. Consequently, when such discharges have become chronic in individuals suffering with any of the constitutional dyscrasias, it is very easy for local changes to take place in the middle ear, such as polypoid degeneration of the mucous membrane, necrosis of the ossicles and walls of the tympanic cavity, the formation of cholesteatomatous masses, which when they have once found a firm foothold, are almost impossible to be eradicated except by surgical measures. In such cases, thorough and appropriate treatment should be used at the time of the acute attack, and thus avoid in many cases the extension of the same into a chronic condition. Proper treatment of these cases in the acute stages will, in the majority, prevent a subsequent chronic trouble. I am firmly convinced that most of the cases of chronic suppuration from the middle ear result from the mastoid antrum having been seriously affected at the time of the acute trouble, and if the same had been recognized at that time and a simple mastoid operation performed then upon the ear, the subsequent trouble would in all likelihood have been avoided, and the necessity for a more radical operation have been removed. In the treatment of such cases, internal constitutional medication plays as prominent a part as all the local remedial measures at our command; consequently, the work of the aurist should go hand in hand with that of the family physician. Coming now to those cases which are chronic when seen by us for the first time, let us consider their symptoms and their proper management should we desire the best results.

Cases of chronic suppuration from the middle ear are multiform in variety. Just as acute cases differ in severity, so also the chronic forms. Objective appearances:

These vary greatly. The longer the time the discharge has existed, the more destructive will be the appearances. In all of these chronic cases, as a rule, if there has been no active treatment, the walls of the auditory canal will be found white and glistening, the epithelial layer of the skin having been entirely eroded by the passage out of the secretion. On syringing one of these chronic ears which has not been treated, we will find coming away with the water large flakes of desquamated epithelium, both from the drum, canal and tympanic cavity. When this is removed, we find that the drum membrane will contain perforations of all sizes, and in many cases only a rim of this membrane will be present. Experience and observation teach us that the longer the chronicity has been present and the more severe has been the purulent process, the more destruction of the drum membrane we are liable to find.

In some cases, the mucous membrane of the middle ear will be white and sclerosed, while in others it will be red and granular in appearance, and in some cases showing a distinct polypoid degeneration.

If, with the destruction of the drum membrane, we find also an erosion of the inner wall of the canal and the tympanic cavity, with the presence also of cheesy, fetid secretion, then we have the suppurative condition in its worst form, and it is just in these cases that complications of a most serious nature are liable at any time to occur. By means of a probe passed up into the tympanic vault or back towards the mastoid, necrosed bone is nearly always likely to be found, and rarely ever have I found that disgusting fetid odor without discovering the presence of dead bone. In fact, experience teaches me that, in nearly all of those cases where the odor is exceedingly offensive, the drum membrane destroyed and the attic filled with

cheesy masses, nothing short of a radical operation will be sufficient to effect a cure. In many of these cases there will have been an involvement of the mastoid bone at the time of the acute attack, but having free drainage by way of the auditory canal and middle ear, the symptoms may not have been severe enough to warrant a mastoid operation at the time, and yet sufficient to cause a disintegration of the cell spaces of the mastoid, and especially of the antrum itself. For this reason, a mastoid operation performed during an acute attack, when every symptom points to the involvement of this bone, even though the classical symptoms of redness and edema over the mastoid be absent, will often be the one treatment which will save the patient years of chronic trouble, save the hearing and be a probable preventive of a more radical operation in this region at some later date. I have rarely ever done a radical operation upon the middle ear where I have not also found some chronic changes in the mastoid and in some cases even a small fistulous opening may be found on the surface of the mastoid, which shows the previous involvement of this bone. In many of these cases, the offensive odor from the ear involved is sometimes terrific, being a symptom which, in itself, will necessitate an operation.

Such a case as this recently came under my care. A young girl, nine years of age, an inmate of the Home for the Friendless, was sent to me with a note saying the discharge and odor from one of the ears of this patient was so offensive that her teacher at the public school had sent her home with the message that the odor was so disagreeable in the schoolroom as to be compelled to request the withdrawal of this girl from school. On examination, I found the left auditory canal with a cheesy cholesteatomatous mass, which when washed away, disclosed the

middle ear with drum destroyed and only remnants of the ossicles remaining. The odor was something fearful. She was placed in the Grady Hospital, where I performed a radical operation two days later without skin grafting in the canal. It took eight weeks for the middle ear and canal to heal, but after that the ear was thoroughly dry, all odor disappeared, and in the same time the patient gained ten pounds. Previous to this, the ear had been treated in the ordinary way for five years without results of benefit.

Subjective symptoms: These also vary greatly. Some patients with suppurative otitis media go through life without any discomfort whatever, while others experience pain in the ear whenever they take a cold, suffer with neuralgia of the head and face, headaches and general discomfort, vertigo, and above all, a general lack of what we call good health. That such a suppurative process is a drain upon the entire constitution has long been recognized by otologists, and although the discharge may seemingly be perfectly free, yet there can not be any question of the absorption into the lymphatics of a certain amount of this poisonous material. It is self-evident, then, that it is for the best interests of the patient that he be cured of such a pathological process. An acute exacerbation on top of a chronic process is always more serious than an acute process occurring in the ear for the first time, since in the former the surrounding walls are not near so able to act as a barrier against any outward extension of the acute process as they would be in the latter case. Consequently, most of the complications which arise occur in cases where the acute attack has been preceded by a chronic condition.

The treatment of chronic suppurative otitis will divide itself naturally into two heads:

(1) Conservative, or such as are treated by the local application of medical remedies.

(2) Radical, or such as are treated by surgical intervention.

1. When a suppurative condition of the middle ear has been treated for a year without decided betterment of the pathological process, the question of management resolves itself into either allowing the discharge to continue indefinitely or to undertake its cure by a radical surgical procedure.

Otologists differ very greatly as to the best remedies and the best mode of applying these in the treatment of this condition. Some advocate the dry method, or that of the insufflation of powders, while others cling to the "wet method," or that of syringing the ear and the use of drops. After all, the success in curing a discharging ear by topical applications is largely a matter of personal thoroughness of the physician, it matters not what method is used. I mean by thoroughness, the giving of the time to each treatment instead of seeing the patient occasionally and allowing the treatment to be carried on at home during the interval. That some remedies possess more germicidal and therefore a more curative effect upon a diseased condition of the middle ear than others is certainly not a fact to be questioned. During the last five years I have used a solution of formalin with decidedly more efficacious results than any remedy used previously. The use of this remedy is always tried for several months, and even a year, before considering a radical operation, unless there are some decided subjective or objective symptoms which would lead me to act otherwise; such, for an instance, as almost continuous headache on the side of the affected ear; an old fistula over the mastoid process; a large area of necrosed bone or the presence of cholesteatomatous

masses in the middle ear; an ear that has previously been treated for a long time by a good otologist without benefit. These are conditions that might influence me in urging an immediate radical operation. My method of treating the ear by topical applications is as follows:

The patient, at the very beginning, must be seen daily, and then the visits diminished as the case yields to treatment. The patient's ear is syringed out thoroughly with a warm saline solution, followed with peroxide of hydrogen held in the ear, to be followed immediately with another syringing with the saline solution. The ear is then dried with cotton, after which a solution of formalin is dropped and held in the ear for five minutes. I start with one drop of 40 per cent. solution to two ounces of water, and this is gradually increased to two drops from day to day, and up to the strongest point of toleration by the patient. This remedy is nearly always followed by a dull aching and pain, and in some individuals there must be an interval of rest; otherwise, a dermatitis of the canal may intervene. If there is much discharge, the patient is instructed to syringe the ear at home, and to use also drops of a very mild solution of formalin. Should the use of this remedy cause too much swelling and irritation in the ear, then it is best to stop for a few days, using only the syringing with saline solutions to be followed by the use of aristol powder. After several years' trial of all the various topical remedies which have been suggested for this condition, I have at last found that the above method gives the most satisfactory results, and will frequently cure when all other remedies have failed. I am by no means an advocate of the dry method, or that of filling the ear with powder, stopping the discharge to all appearances, but leaving the morbid condition beneath it unchanged. However, a combination of the two will

sometimes prove most encouraging in its results. For instance, the aurist will find that occasionally an ear will heal if, after cleansing and drying the same, a light coating of boracic acid or aristol powder is dusted into the middle ear. For this reason, the methods of treatment must be changed according to the practical judgment of the aurist.

In using these local therapeutic remedies, we must by all means remember to put the middle ear in as good a condition as possible; for free drainage from every little crevice and the inspection and palpation of every part of this region is absolutely necessary to secure the best results from the treatment which is to follow. This means the removal of any remnants of the drum membrane, and necrosed ossicles; the curetting away of any diseased tympanic wall, especially in the region of the attic and the removal as thoroughly as possible of all polypoid mucous membrane. This latter must be done before local remedies can have the desired effect.

2. If, after a thorough and consistent trial of the conservative treatment, the fetid discharge still continues, and especially if there is present necrosed bone, then we are forced to subject the patient to the radical operation if we would effect a cure. I mean by a thorough and consistent trial, the use of every remedy that is likely to be healing to the ear, for aurists well know that the simple change of local remedies will sometimes cure an ear which previously seemed impossible to heal. Not long ago I examined a little girl twelve years old, who had undergone two mastoid operations at the hands of another aurist, and yet the discharge from the middle ear indicated a necrosed condition of the tympanic walls. I gave it as my opinion that nothing short of a radical operation would produce a cure. This the parents refused, but asked

that I treat the case locally, even if I thought it could not be cured. This I consented to do, and strange to say, in a month's time both ears were dry and apparently healed. Since this experience, I am still more conservative in the thorough trial of local treatment before resorting to the more radical. Especially is this true in children and in those who have adenoids in the nasopharynx—a condition which should always be removed before we think of doing a radical operation upon the ear.

By the radical operation, we mean the removal of all necrosed bone in and around the tympanic cavity, including the ossicles, a result which can only be accomplished by removing the bone between the mastoid antrum and middle ear, throwing thus the auditory canal, the mastoid antrum and the middle ear into one cavity. Let us mention the fact here that this operation is not to be spoken of lightly as being one of simplicity and easy of execution, for few operations require better anatomical knowledge, more deftness in the manual technique and better operative judgment than is required in the so-called radical operation on the middle ear. An extensive experience with this operation upon the cadaver should have been acquired by every operator before undertaking it upon the living—an experience which is not only due the patient, but is also due the physician himself. The surgical skill necessary in the proper performance of this operation has not been recognized by the laity, certainly not to that degree with which they consider an operation for appendicitis, when, in fact, an operation of the latter nature is much simpler, requires much less time, and is being performed successfully by almost every physician with any surgical experience.

In the performance of the radical operation upon the middle ear, the occurrence of the following results must

be considered, and should be intelligently placed before the patient or his parents before the same is undertaken.

1. Injury to the facial nerve with a consequent facial paralysis for a more or less definite time.

2. A loss in the amount of hearing power in that ear, as compared to that which existed before the operation.

3. A possibility that the discharge may not be entirely cured.

4. A last possible result need hardly be considered, and that is an injury to the sigmoid sinus, an accident not liable to happen to the careful operator.

The technique of the operation is as follows: The patient is prepared just as we do for all major operations, the hair shaved for an inch above and behind the ear, the parts thoroughly cleansed with a bichloride solution and a pad placed over the ear until the patient is on the table under the anesthetic.

An incision is now made through all the tissues down to the bone, commencing at the middle of the tip of the mastoid, extending up in a curved direction around the top of the ear to a point directly above the base of the tragus and about one-fourth of an inch from the attachment of the auricle to the external auditory opening. With a periosteotome the soft parts are pushed back and the bone laid bare over the mastoid and above the external auditory canal. With a small blunt periosteal elevator the canal is detached posteriorily and above down to the tympanic ring, leaving as much undisturbed anteriorily as possible as an anchorage when the same is replaced. A strip of gauze is now pushed down in front between the cartilage and the bony canal, and brought out again through the natural canal opening, thus serving most admirably as a retractor for pulling forward the membranous canal. At this point operators differ as to the next line of procedure,

but in my own work I have been exceedingly well satisfied with the following technique: With a chisel and mallet, the bone is carefully removed in layers from the supra-meatal triangle downward, following closely the posterior wall of the canal until the antrum of the mastoid has been entered. A probe is now bent and passed from the antrum into the attic of the middle ear, and this must remain as our guide in preventing an injury to the facial nerve. With gouge, bone forceps and currettes, the superior and supero-posterior walls of the bony canal are gradually removed, giving the opening thus made a conical shape with the apex toward the middle ear. In removing the bone just above and below the probe, which has been passed from the antrum into the middle ear, we must be exceedingly careful, since it is just here that an injury to the facial nerve is most likely to occur. Sometimes in removing the superior wall of the canal we are apt to uncover the dura, but this need not give us much concern, since this membrane has a wonderful ability in taking care of itself. When all the bony canal required has been removed, we can then inspect directly the tympanic cavity and remove without difficulty the ossicles and any remnants of the drum membrane which may still exist, and also be able to curette thoroughly the tympanic cavity. In curetting, we should be very careful; otherwise we are very likely to injure the facial nerve and the anesthetizer should watch carefully for any muscular twitchings about the face when the surgeon is working in this region. The mastoid antrum, auditory canal and tympanic cavity having now been thrown into one cavity, and all foci of chronic suppuration having been removed, and the whole cavity having been thoroughly swabbed with alcohol, we are ready to replace the auricle and membranous canal. Since the auditory canal is now much larger pos-

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teriorly than previous to the operation, the cartilaginous membranous canal in its natural shape will not be able to fill this new formed cavity, consequently we slit the membranous canal supero-posteriorly all the way from its inner extremity up into the concha of the auricle, and then replace this slit membranous canal. This is held in place by an iodoform gauze packing through the normal auditory meatus deep into the middle ear, which, in this manner, will hold the membranous against the bony external auditory canal. There is, of course, a space left between the cut surfaces of the membranous canal which can be filled immediately by skin grafts, or this operation be postponed until a later time. Primary skin grafting is exceedingly difficult of performance, and the results not at all encouraging. The posterior skin incision is now closed entirely by interrupted sutures, while the middle ear is treated and drained through the normal auditory meatus. A wet bichloride gauze dressing is now placed over the ear and the whole secured with a roller bandage. In the description of this operation I have, of course, not gone into every detail, and some of the steps are more extensive than has been here described.

After-treatment: The packing in the auditory canal and middle ear need not be removed until the fifth or sixth day, unless some complication should arise, such as a high elevation of temperature. The outside dressing should be removed once every twenty-four hours, because it makes the patient feel very much more comfortable. During the first thirty-six or forty-eight hours, the patient is apt to have very severe pain resembling an ordinary earache and if this occurs, small doses of codeine will have to be administered. At the end of five days the internal packing can be removed, which is the most painful of all the dressings, the cavity wiped out with

dry sterile cotton, swabbed with alcohol and bichloride of mercury, and then repacked with narrow strips of iodoform gauze. These packings, from now on, can be changed every two or three days, and the same methods of cleansing used as was done at first. We need not be surprised to find an odor on the packings for the first week or two, but this will gradually disappear. In ten days, if the posterior wound has entirely healed, the stitches may be removed and the patient allowed to come as an office patient. It is necessary for the patient to be under observation and treatment for at least five or eight weeks, and sometimes even longer. The question as to how long we should continue the gauze packing in the auditory canal, is one which I have never seen mentioned. My own experience leads me to the conclusion that the patient does decidedly better when the packing is used than when it is not, for it drains the ear better and prevents in some degree the formation of granulation tissues. Consequently, I think the packing should be kept up until the ear is practically well, varying the amount and frequency of application to each individual case.

What should be the final appearance of an ear upon which the radical operation has been performed? The whole cavity should be covered with skin, for that is what we attempted at the time of the operation, except at the point of its junction with the middle ear, which will here show a muco-cutaneous surface.

What effect does the operation have upon the hearing? In nearly every case the hearing ability is less than it was before the operation, in some it remains the same and in a few the hearing power improves. On the other hand, the general health always improves, and even though the hearing is made less, we can always be assured

that we have helped rather than retarded the patient in successfully battling against future physical ailments.

Grand Opera House.

DISCUSSION ON DR. ROY'S PAPER.

Dr. C. L. Williams, of Columbus: I have been very much interested in the paper read by Dr. Roy, because it has brought to my mind a very sad experience I had a short time ago. A mother brought her child, a boy, to me in the fall of 1895, with a discharge from the ear. I did not think much of it, and gave the child some constitutional treatment, with local applications, to be followed closely by the mother. The boy was about ten or twelve years of age. I never heard anything more from him until two or three months ago, when he had an attack of measles from which he suffered excruciating pain. He had fever afterwards, followed with a discharge from the ear. The fever continued, notwithstanding the measles passed off. The little fellow was in bad health. I tried to improve his general condition by local and constitutional treatment, and finally an aurist was called in who prescribed wiping out of the ear with some antiseptic solution on cotton, also inhaling the same antiseptic. The boy seemed to improve under this treatment. The little fellow went on seemingly improving for several days, when the aurist ceased his visits, with the exception that occasionally he was called in. The same treatment was kept up, although all the time the boy was suffering very much from pain over the eyebrow. One night (I suppose it was about a week after I had called in the aurist) I was summoned late. When I got there, there was another physician present, who had been summoned from nearby, and I found the little boy had convulsions. He had been suffering a great deal that afternoon, and in an hour or two hours after I saw him he died.

This case teaches us that these discharges from the ear ought not to be looked upon as a light affair.

Dr. R. B. Ridley, Jr., of Atlanta: I would like to say that I have listened to this paper with a great deal of interest, and I find that Dr. Roy has embodied in his paper practically the same ideas as to treatment that I use myself. The longer I am engaged in this practice and see these cases of chronic ear trouble, the more thoroughly am I impressed that the radical operation is the only treatment for chronic suppurative conditions of the middle ear. I believe, however, before we do the radical operation, when we first see the patient, it is our duty to give him every advantage of proper medicinal treatment. In using formalin, as Dr. Roy has said, I have found that in connection or in combination with a weak formalin solution used at the office, twenty-five per cent. argyrol solution given to the patient at home will counteract the inclination of the formalin to produce a dermatitis of the external auditory canal.

I want to say that the dry treatment of insufflation of powders through the external auditory canal and from there into the middle ear, as a practice, should not be countenanced, because the powder in connection with the discharge forms a paste and dams up the opening that is present in the drum and prevents any further drainage. It is liable to dam up the opening, break down the mastoid, and set up more serious trouble.

I was favorably impressed with the paper, and I have gained many ideas from it that will benefit me, and I am sure it will benefit others present.

Dr. L. Amster, of Atlanta: I want to say a few words in regard to prophylaxis in these cases.

So far as the operation is concerned, Dr. Roy is naturally qualified to deal with it; but there is a great

deal of prophylactic work to be done by the physician to prevent from getting these cases when they are chronic. I think in a good many cases the physician is to be censured for not paying attention earlier to these cases, so that they may not develop into chronic middle ear trouble, especially during measles or during an attack of scarlet fever. Personally, I have never considered lightly the fact that a child complains of ear trouble. I believe paracentesis of the drum in these cases will tend to lessen the number of chronic instances. The family physician could exert a beneficial effect on these cases by insisting on the parents letting these children be operated for adenoids; not let them wake up with open mouths, which gives them a stupid appearance, but recognize the condition, have the adenoids removed promptly, so that future troubles may be obviated.

Dr. J. L. Hiers, of Savannah: This paper deals with a line of treatment which I have advocated for many years, consequently it has been of intense interest to me. If there is one thing that is of interest to the aurist and the family physician it is a running ear in a small child. Often the child is allowed to go around in all sorts of weather and is subjected to all sorts of exposure from early childhood, and there may be enlargement of the pharyngeal tonsil, commonly known as the adenoid. The running ear keeps up and becomes chronic, and all sorts of stuff, from castile soap, sweet oil to laudanum, are used by the old granny women, if we may so designate them, and then it is up to the aurist. But there are one or two points I wish to emphasize. Too much care and attention to the post-nasal space can not be given. In every instance in which there is a suppurating ear, as soon as we are through with the examination of the ear, the next thing to be examined should be the post-nasal space,

and not only that, but where there is an enlarged adenoid existing for some time there is hypertrophy of the turbinated bone, which invariably subsides after the removal of the adenoid growth.

I have tried everything possible that has been recommended toward the cure of suppurative otitis media, but I must denounce the insufflation of all powders in the strongest terms. In my hands they have been more harmful than beneficial, and, as Dr. Ridley has suggested, the wet treatment, syringing with strong antiseptic solutions, may be best suited to each individual case, and the use of drops where the wet treatment seems to be contraindicated. I wish to emphasize the importance of using dry treatment, but only in the method of packing the ear lightly with absorbent gauze, preferably bichloride or iodoform gauze. That has been ideal dry treatment in my hands.

I wish to thank Dr. Roy for his valuable paper. I have gained many points from it, and I feel greatly benefited by it.

Dr. Claude A. Smith, of Atlanta: I would like to ask Dr. Roy to tell us what has been his experience with regard to brain abscess following in these cases without mastoid involvement, either of the ethmoid or mastoid cells themselves, and in what proportion of cases it occurs?

Dr. Henry R. Slack, of LaGrange: I wish to thank Dr. Roy for his valuable paper. I do not claim to be an aurist myself, but as I do a general practice and confine it principally to office work, I see a great many ear cases which fall into my hands. I would not attempt the radical operation upon a discharging ear, because I have not had the necessary experience, and I agree with Dr. Roy thoroughly that a physician before attempting to

perform this operation should experiment on a number of cadavers. I have found in my limited experience that the wet treatment is decidedly the best, especially if we have to entrust it, as we often do, to the members of the family. If you give any member of the family directions how to pack the ear they will produce no discharge, and instead of going forward the pus will burrow backward. I do not believe it is wise to trust to members of the family to treat the ear at all, but often we have to do so, and when we do mild antiseptic solutions are the best. In getting rid of granular conditions of the ear, I have found frequently nitrate of silver has been efficacious.

Dr. Roy (closing the discussion): In answer to the question of Dr. Smith, I will say that I do not know what the proportion of abscesses in the brain is.

Dr. Smith: I find from statistics that probably what occurs in one section of the country, or in Europe, for instance, does not apply to our section. I simply wanted Dr. Roy to give us his experience.

Dr. Roy: Involvement of the mastoid in these cases is less frequent in the South than it is up North. Physicians see many more cases in the North than we do in the South. In my experience the mastoid is involved first, and then there is extension to the brain. In some cases the disease seems to go through the top of the tympanic cavity into the brain substance, forming a subdural abscess, or it involves the brain substance.

There are one or two points to which I desire to call attention. First, it is the prophylactic treatment that I especially wish to impress upon those who have listened to me this morning. It is a fact that a large proportion, if not all, of these cases of chronic trouble come from an acute affection which existed before. The acute attack develops into a chronic one, and in the majority of

cases of running ears the mastoid is involved at the time of the acute attack. The chronic discharge which follows is simply from a diseased antrum or mastoid, and that is simply like a bucket—filled up with water and emptying itself through the auditory canal and tympanic cavity. In these acute cases you can easily tell whether the mastoid is involved or not. If it is involved, and you make the mastoid operation, establishing thorough drainage from the mastoid antrum through the middle ear, and let the case heal up, you will not have any running ears. The trouble is that these ears are not attended to during the acute attack, and if you will consider that one point there will be a much less number of running ears. I want to call your attention to the fact that in these cases of acute inflammation of the middle ear, whether it is pus or mucus, if the discharge keeps up for a long time, three or four weeks without cessation, it shows absolutely that the discharge is coming from the mastoid, and unless you open the mastoid, establish free drainage, open all the cells and destroy them, you are going to have discharging ears.

My paper dealt not only with the treatment when these cases come to you, and which you have not seen previously, but it was to direct your attention to the acute cases when the mastoid is involved, and if you will go into the mastoid and secure free drainage, you will have no chronic cases to treat. It is necessary to have edema, swelling, with the ear sticking out, so to speak, in order for the mastoid to be involved. It is very essential for those symptoms to occur, and you can tell from the character of the discharge and the length of time it keeps up, and when it keeps up for three or four weeks without cessation, shows mastoid involvement, and if you break up the mastoid cells, and establish free drainage, then you will not have chronic trouble to deal with.

SOME REMARKS ON CHRONIC CONDITIONS.

By H. McHATTON, M.D., Macon.

It seems that in the wonderful advance of medical science in all its departments in the last few years, that there is one class of disease in which the patients are not getting the full benefit that they should derive. This large number of afflicted can be classed among the chronic and subacute types of diseases. Many of these can be cured. Many can be rendered comfortable for an average lifetime, and all can be ameliorated and rendered more comfortable for varying periods of time by proper medical supervision, which they do not get, simply because a diagnosis is not made early enough in their cases.

This lack of early diagnosis in these serious conditions is due to both parties—the patient and the physician. On the part of the patient, we have the American craze for patent medicines, for specialists and for home-made diagnosis.

These unfortunates of the least intelligent class have a diagnosis and remedy for every conceivable type of sickness, and only send for a physician after the so-called home remedies have been exhausted.

The more intelligent have a series of specialists whom they consider responsible for the various organs of their body. But who is responsible for the man himself in the altogether, as DuMaurier would describe it? No one.

He has as a rule no family physician, when we all know that he should have not only one, but two. His regular family physician, who, if worthy of the trust, should be absolutely familiar with his physical condition, and any defect that he may have, also a second choice for emergencies, who should be posted as to any existing chronic disease.

When we are called to a new family where we have any reason to presume that we will be the family physician for even a short space of time, it is our duty not only to prescribe for any slight, transient ailment that may exist, but at the earliest possible opportunity to make a complete examination of every member of the family, so as to be able to give them more efficient service in the future. This can be done as a rule without exciting comment. When we find a patient in bed, a good examination may be obtained of the heart, lungs and abdominal organs, and the request for a specimen of urine excites no comment in these days. Then think of our position when we are called in an emergency and know that there is no pre-existing organic lesion.

We may not live to see it, but the time will come when all sensible people will go to a physician once or twice a year for a complete physical examination. They go to the dentist with regularity to have their teeth examined—the condition of our heart, lungs and kidneys are certainly of more vital importance than the condition of our teeth.

Just think for a moment what the result would be if all of our patients were to have a complete physical examination once a year, with our present capacity for accurate and early diagnosis. In tuberculosis alone, the saving of life would be too vast to contemplate. We know that when the diagnosis is usually made, the large majority

of these unfortunates are incurable and at the same time, some of our best authorities place the recoveries of the incipient cases under proper treatment as high as ninety per cent.

In infancy and early childhood, think of the immense number of cases of marasmus, rickets, tubercular joint diseases, and under the modern methods of feeding—scurvy, that either kill or handicap for life, that are not cured, because they are only seen after the damage has become irremediable.

At puberty, the army, especially of girls, where proper medical supervision as to hygiene, school work, etc., for a year or so, means the difference between a healthy future life or the nervous and physical wrecks that one sees every day—a curse to themselves and everybody that they come in contact with. When we come to adult life, middle life and old age, the amount of benefit that is to be obtained by an accurate knowledge and proper attention to our physical condition is too vast to be taken in detail.

Take the two most common, chronic, incurable lesions: certain types of heart and kidney diseases. We all know that taken early and given proper attention, life is often prolonged indefinitely. No one can tell how long a given case may live a life of absolute comfort.

At present, I have a patient who has had a chronic cirrhotic kidney for over fifteen years. Another died last winter from an intercurrent pneumonia, who had been under observation for about eighteen years. Another who had been carried through several attacks of impending uremia, in the course of years, moved his business to an adjoining city. I insisted on giving him a letter to a physician and emphasized the importance of immediately putting himself under his care. A few months later, his

death was announced from congestion, and my letter was found among his effects.

About twelve years ago, I saw for a transient condition, a schoolboy who had an enlarged heart with mitral lesion. He was under my care for about ten years. At the end of that time, if there was any material change in his heart, it was not discernible. He moved to another city, and did not recognize that going up and down several flights of stairs twenty or thirty times a day was violent exercise. In two months he returned home with a dilated heart and died after being bedridden for six months.

A few days since I saw in consultation a frail young woman whose heart had never been examined, but who gave a history of slight cardiac damage. Her father was taken sick, and she insisted on nursing him. On trying to lift him, she was taken with a violent pain in the left side and lived two days. Diagnosis: Dilated heart.

Suppose she had been warned of her condition! How often do we hear of an intimate friend or a patient who has been refused life insurance for some organic lesion that should have been discovered and treated years ago. How often do we find that some patient who comes to consult us for some supposed trivial ailment is really in an advanced stage of a chronic disease.

We hardly ever attend a medical meeting that some of our brother specialists do not read us a paper on "What the General Practitioner Should Know About So and So," with a laudable intention of putting the general practitioner in a position of making an early and accurate diagnosis of the disease in question.

Do any of you recall ever having heard anything in regard to what the specialist should know about general medicine?

We realize that the experience of an individual is but

a drop of water in the ocean of knowledge, but a drop is something in my opinion, in the existing status of the profession. Where there is one error of omission that is of material detriment to the patient committed by the general practitioner, there are ten committed by the specialist. The fault lies, first, with his patients, and, second, in the lack of a proper degree of appreciation by the specialist and the general practitioner of the inestimable value to the patient of their conjoined service.

A few years ago, it was unusual for a patient to go to a specialist excepting through the advice of his physician. The specialists of that time were men who had carefully worked themselves into special lines and had a just appreciation from early training of the value of the knowledge of the general condition of the patient and its bearing on the treatment and prognosis of the given case.

Gradually young men began to go directly into special lines of work with no practical knowledge of general medicine. At the same time, the public became vaccinated with the idea that if they had a symptom referable to any organ or region of the body presided over by a specialist, it was simply a loss of time, and, incidentally, dollars, not to go to headquarters at once and get the best, which was a rational line of reasoning from their standpoint.

If you will excuse slang, right here trouble began, which has increased ever since. The patient began to lose the full benefit which he should derive from modern medicine, which he will continue to lose until there is more accord and interchange of views for his benefit between the specialist and the general practitioner. This is an existing condition in the profession to-day. None of us can deny the fact. It has gradually crept in year by year; virtually no one is to blame. Still the innocent patient is surely the victim.

If the general practitioner would give the history to the specialist of every case that he refers to him, and the specialist would require one from the patient that goes to him of his own accord, many valuable lives would be saved and an untold amount of unnecessary suffering would be avoided.

Nearly every chronic condition at one time or another gives symptoms referable to one or more special organs. If these symptoms are mistaken for the fundamental disease and treated as such, two results follow: the chronic disease does not receive the appropriate treatment and a correct diagnosis is not made, because the patient has, in his opinion, the best specialist obtainable for the offending organ.

How many of us have seen a specific iritis treated as a traumatic or idiopathic condition; or an infant in active syphilis operated on for adenoids, or have had patients request us to give them an anesthetic for an operation already appointed when we know of pre-existing conditions which render even the administration of an anesthetic extremely dangerous.

In my early professional days, I once occupied the unenviable position as a witness in a twenty-five-hundred-dollar damage suit for an injured bull. The lawyer for the defense soon proved to the satisfaction of the jury, and incidentally to myself, that in Bellevue Hospital Medical College, although the seven branches of medicine were taught, there was no chair of either Bull medicine, Bull surgery or Bullology. He then said in a most bland manner:

"Now, young man, we will presume that you would know something about a man injured as this bull was,—would you consider him seriously injured?"

"Yes, sir."

"In a condition where complications might arise?"

"Yes, sir."

"Would fever be a probable complication?"

"Yes, sir."

"A dangerous complication?"

"Yes, sir."

"Would diet in this fever be one of the essentials of treatment?"

"Yes, sir.

"You would give him something along the lines of milk, milk punch, animal broth, etc., would you not?"

"Yes, sir."

"Now, young man, tell the gentlemen of the jury what diet you would have put this bull on under the same conditions."

It is easy to imagine how competent I was to answer this last question.

What chance would the average general surgeon or throat specialist of ten years practice stand in a competitive examination in infantile dietetics. At the same time operations, such as cleft palate, for instance, have rather a large mortality.

A large percentage of tubercular patients that come under my observation have been treated for various periods, even up to two years, by throat or stomach specialists—sometimes by both—and notwithstanding the constant progress of the disease, often accentuated by a most restricted diet, the question of lung complication has never occurred to the doctor or patient.

Patients with chronic Bright's, various cardiac affections or appendicitis have often served a long apprenticeship of stomach washing with no examination having been made except of the secretions of that organ.

But why multiply examples. We are all familiar with them.

There is another class of patients where a full understanding between the specialist and the general practitioner is essential. I refer to a class of patients of whom all general practitioners have a few in whom not even the most astute diagnostician could make a diagnosis if unaided by the former attendant, for example, the innocent syphilitics.

We will grant that both the general practitioner and the specialist are doing their duty to the patient, have made a proper diagnosis and are pursuing the proper line of treatment. With the present relative positions so commonly held and the lack of correlation between the various medical attendants, a patient is still in extreme danger.

To illustrate, I had a patient some time since with an active secondary syphilis, which in due course invaded two organs presided over by specialists. He promptly consulted the most accessible authority on each organ. Each authority made a diagnosis of syphilis and put him where I had him, on the mixed treatment.

As each of us had every reason to believe that we were the only attendant, and the patient was very good about taking his medicine, the result was most unpleasant.

To my brother specialists I would insist that when a patient comes to him who is not directly under the observation of a general practitioner, whose general condition can not be fully and absolutely accounted for by the local lesion which he is treating, it is as much his duty to refer said patient to a competent general practitioner as it is ours to refer him to a specialist, and even more so, because a life is often lost that could be saved. The innocent patient has every reason to believe that he is getting the full benefit that can be derived from medical science, when he is not.

I would advise the general practitioner to study every-

thing that will lead to accuracy of diagnosis—it is the absolute foundation of your art. Without a diagnosis, you are thoroughly at sea. With one, you can find everything in literature that has been done in the given disease. Do not neglect your clinical observations; they are of incalculable value. Avail yourself of every advantage that can be derived from laboratory research, but remember that the patient may die of tuberculosis without a bacillus being found in the sputa, or that he can have a chronic Bright's and occasionally pass a normal urine.

Most errors in diagnosis are not from lack of knowledge, but from incomplete examinations and insufficient time for observation of the case. Do not hesitate to tell a patient that you do not know what his disease is, and it may take time and repeated examinations to make a diagnosis.

DISCUSSION ON DR. M'HATTON'S PAPER.

Dr. Dunbar Roy, of Atlanta: I do not know when I have enjoyed a paper more thoroughly than I have that of Dr. McHatton. It is timely, and one that should be read by specialists and by general practitioners. In my paper I said the work I did should go hand in hand with that of the general practitioner, and that is the only way in which we as specialists can be successful. The man who undertakes special work, without doing or having done a certain amount of general practice, or going into a general hospital before he undertakes special work, will in time come to grief, and will not be successful in the treatment of his cases. Young men come to me and ask what is the best specialty to take up—the eye, ear, or nose and throat? They want to start out immediately after graduating, without any idea of doing any general practice. And every day I see cases that have been seen by

others in which mistakes have been made and these mistakes have been largely due to a lack of knowledge of general therapeutics and of the general conditions of the body, and whenever a patient comes to me I always try, as far as possible, to look into the whole system, and refer that patient to the family physician that I may get certain details which I can not know myself. This is the only correct way any specialist can treat his cases successfully.

I enjoyed the doctor's paper. He is on the right line, and I certainly believe that there should be a thorough understanding between the specialist and the family physician by which the work of the two shall go hand in hand.

Dr. W. S. Elkin, of Atlanta: While I can not add anything to what Dr. McHatton has said in his paper, because he has covered the ground so thoroughly, still I think a paper of this kind does the Association more good than many of the scientific papers we have had.

I have had a good deal of experience in teaching in the last ten or twenty years, and it has been my custom and my habit to impress upon the students of the medical college to always look carefully into each and every case.

My experience has been considerable in the line of syphilitic treatment, because for years I was connected (the first few years particularly) with a college that ran a syphilitic clinic, and for that reason this thing impressed itself upon me, that our relations to patients are such that many of them do not reveal the actual facts as to their condition, although we treat any information they may give us confidentially. I never have a patient with syphilis, if he goes somewhere else, that I do not impress upon him the importance of telling his physician, wherever he goes, that he has had syphilis. It gives the practitioner in that family a knowledge of the condition of the children of

those people. There are a great many diseases that infants are subject to that may have some connection with inherited syphilis, and if the physician who treats the members of that family is not aware of that fact, or if the specialist is not familiar with it, he is not in a position to treat the patients properly.

I have had a similar experience to that of Dr. McHatton in reference to stomach work. Patients' stomachs have been washed out time and again; they have come back to me, and I have found that those patients were suffering from some trouble that incidentally was due to syphilis. The thing for us to do is to preach and practice and tell our students and patients that the general practitioner and the specialist should work together, co-operate with each other, in this matter.

Dr. J. L. Hiers, of Savannah: I have been very much interested in Dr. McHatton's paper. This meeting has started out in such a way that the indications are we shall have one of the most interesting meetings in the history of the Society.

With reference to chronic conditions, I wish to emphasize this point, that the sooner the general practitioner wakes up to the importance of referring his patients to the specialist, in whatever line the case may be, the quicker we are going to get rid of a great many cases we now have. We will have fewer chronic conditions to contend with. And the sooner the specialist wakes up to the importance of calling the assistance and asking the co-operation of the family physician in looking after all constitutional troubles, the more successful that specialist is going to be in whatever line he is practicing; and it is my opinion that a more intimate relation between the family physician and specialist should be established, and the sooner the family physician and the specialist, whatever line he may be

practicing, can co-operate in their work more intimately than they do now, they will certainly have much better success, and fewer chronic conditions to deal with than we now have.

Dr. St. J. B. Graham, of Savannah: This is one of the most valuable papers I have listened to for a long time, particularly as regards three points. First, the point of having the family physician examine, as far as possible, all members of the family. We all know how discouraging it is to be family physician and see one or two members, and then he called in some emergency, or in case of sudden death, that might have been averted if the doctor's guide could be taken.

One of the oldest Oriental nations, particularly the Chinese, long ago adopted the method of employing their physicians to keep them well, and they kept them well, because when they became ill the salary of the physician was cut off. I do not know that Western nations will ever become so highly civilized as that. (Laughter.) I believe they will. At any rate, it is a comfortable plan to look out for those in whose families we expect to practice as it will save much trouble and annoyance.

Dr. R. Lattimore, of Savannah: I have enjoyed the paper of Dr. McHatton very much, as I think it is helpful and suggestive in many ways. The doctor has stated absolutely my opinion, that the keynote to successful treatment is accurate diagnosis.

I would like to ask him what class of cases of pulmonary tuberculosis he referred to when he stated that the patient might die without finding tubercle bacilli in the sputum?

Dr. Louis H. Jones, of Atlanta: I simply wish to thank Dr. McHatton for his paper and to add my endorsement to what he has said, that not only the patient may suffer,

but the physician's reputation is as sure to suffer when he fails to go thoroughly into his case and to make a diagnosis.

For three years I was so unfortunate as to live in a hotel, and while there I had occasion to see people that were strangers to me. They were the patients of other physicians, and I saw a number of cases in which diagnoses had not been made in serious conditions, and the family physician had probably allowed the men to come to his office with their own diagnoses, and ask for prescription and he would give it to them. A young man came in one day and asked me for a prescription for indigestion, and when I asked him what symptoms he had, he said nothing but a headache. I asked him if his physician had ever examined his urine? He said, no. I requested a specimen, which showed albumin, and under the microscope showed granular casts, and I was enabled to tell the man what his real trouble was. He lived in North Carolina. I gave him a note to his family physician, stating I had examined him and what I had found. The patient not only paid me a decent fee, but he was willing to pay it, and went on his way feeling I had discharged my duty as a physician and had given him a thorough and proper examination. Any man who is intelligent, if he goes to physician's office and is allowed to make his own diagnosis and simply wants the doctor to write a prescription, when he does run up against an intelligent doctor, will lose respect for the first physician. The physician owes it to himself, to his self-respect and reputation and honesty to the patient to go into the case thoroughly and make an accurate diagnosis, and if the case is out of his line, and he can not be expected to know about it, it is his duty to refer the man to some one who can tell. I do not hesitate to say to a patient, "I don't know." I have found out

that there were many things I did not know. There are others, I imagine, in the same fix. I never hesitate to say so, and while I have lost money by it, I have had some little personal satisfaction out of it, and the personal satisfaction a man gets out of the conscientious discharge of his duty is worth more to him than anything else.

Dr. L. Amster, of Atlanta: I think every reading, thinking doctor will agree with all that Dr. McHatton has said in his paper; but he has not given us the remedy. The question is, why do all patients run to specialists? Whose fault is it? Is it the education of your family physician who farms out his cases when he does not know what is the matter with them, or what to do for them, or is it the fault of the specialist?

If a patient comes to me a little hard of hearing, and if I examine her ear and find she has an abscess in the auditory canal, I am conscientious enough for her welfare to refer her to a specialist if I can not attend her properly. I do not hesitate to tell her frankly whether or not I can attend to her case. She may have considerable pain in the ear, for which I give appropriate treatment. There seems to be a lack of confidence on part of the patient of the physician, the impression of the patient being that if she has ear trouble she should go to an aurist, and almost before I knew it the patient was going to a specialist. The specialist looked at her ear and told her the same as I did. Naturally he did not care about the family physician. He took charge of the case without regard of the family physician.

Let us take the case of stomach trouble. A patient who has some trouble with his stomach consults a specialist, and the first thing the stomach specialist probably does is to wash out the stomach, or electrocute it. (Laughter.) Whereas, if the patient went to his family physi-

cian, and the family physician acknowledged he did not know how to take care of the case, and then referred it to a specialist, there would be satisfactory co-operation between both parties. Very serious trouble in my mind sometimes arises in eye and ear, nose and throat work. Understand me, I am not opposing specialists, for whenever there is any special work to be done I select the proper man to do it. But to return to what I previously said, our patients are getting away from family physicians. Why? They go to specialists for a cold; they are sprayed and cocainized on the first of January and the 31st of December. Where is the remedy? And this is what I would like to have Dr. McHatton tell us, how to arrange things so that the family physician may keep his patient, and how to get the co-operation of both the family physician and specialist?

Dr. J. Cheston King, of Atlanta: With reference to the question of Dr. Amster as to where the fault lies, I should say that there is not any fault; that it is eminently proper that the case should go to the specialist, and I contend that the general practitioner is as much a specialist as is the specialist himself, from the fact that the man who makes the greatest success is the one who invariably co-operates with the general practitioner, and there should be mutual co-operation and good feeling, and when these prevail there is a field for both the specialist and the general practitioner, for the general practitioner is a more potent factor in the community in a certain line of diseases than the specialist. The impression seems to prevail that the specialist is lining up on one side and the general practitioner on the other. That is an incorrect view to take. There should be general cooperation and good feeling, and when the general practitioner is confronted with a case that he does not understand, he should

send it to the specialist without any hesitation, and the specialist in return should send some of his cases to the general practitioner.

Dr. C. L. Williams, of Columbus: I have been very much interested in and instructed by Dr. McHatton's paper, and am delighted to see that there is a tendency on part of the general practitioner and specialist to get together. Thank God for it. I say this because of a case I had a few years ago, which accidentally came into my office after I had visited some member of the family. The mother asked me to examine her married daughter. She had a sore throat, and I did not like to suspect that it was syphilitic. But in making a more thorough examination and considering the length of time she had this sore throat, I suspected syphilis. To confirm my diagnosis, after putting her on mixed treatment, she was soon on the road to recovery. She came to me about twice a week. In the same building there was a specialist. She had an eruption which all disappeared, and so long as the woman kept up the mixture her throat would get better. As soon, however, as she left off the medicine and constitutional treatment the eruption would reappear. Under the circumstances, she thought it best to go to a specialist, and she did so, as he had an office in the same building. He examined her throat and charged her $5.00. He put her on precisely the same treatment that I had her on, and then afterwards proposed to me to divide the fee. He wanted to give me $2.50, and he would keep the balance. Now, whenever we have this kind of specialist, the general practitioner will have no regard nor respect for him.

Dr. M. A. Clark, of Macon: I do not think we can discuss the paper of Dr. McHatton too much. The duty of all of us should be the welfare of the patient. The general practitioner should know when his patient needs a

specialist, and the specialist should know when the patient needs a general practitioner. The specialist and general practitioner should educate patients that the proper way for them to do is to consult the family physician first as to what their condition is, and follow the advice of the family physician, and if the family physician is conscientious he will refer a case to the specialist, who will institute the right kind of treatment. As has been remarked, it is true that the general practitioner should refer certain cases to the specialist, and the specialist, on the other hand, should refer certain cases to the general practitioner. It is not so much that the general practitioner is going to make a little more money, but it is that the patient is going to suffer. For instance, there came to my office from a neighboring town a man who was suffering from stomach trouble. I was a general practitioner. He told me he had but fifteen minutes before he had to catch a train. I told him that I could not make a careful and thorough examination in that time, and that he would have to come back some other time. He stayed over. I examined his lungs, and I found him in an advanced stage of tuberculosis. He had been treated for three or four years for indigestion. He had been allowed to lose part of his life without any improvement. He had been allowed to infect his first-born. Now, that man is dead and his son is dead. Both might be living if a correct diagnosis had been made at the proper time and treatment early instituted.

The other day I examined a patient who was in an advanced stage of tuberculosis, and who had been treated for some time for a sore throat by a specialist. He never advised her to consult a general practitioner. If she had not suddenly developed a temperature of 104°, the general practitioner would not have been called in by a mem-

ber of the family. Here is another instance where the golden opportunity was lost.

A short time ago one of my little patients, who was taking modified milk because of some digestive trouble following la grippe, developed mastoid trouble and was taken to a specialist, who immediately advised an operation. The family physician was forgotten. The next day the specialist put the child on albumen and lemonade, and prescribed a heavier diet. Fortunately, the mother came to the rescue and telephoned me, wanting to know the reason she could not give the baby the milk she had been giving. I insisted on the family physician being consulted and casually reminded the specialist that he had forgotten the matter. While neglecting the family physician the child came very near dying, whereas by my working with the specialist as we did finally we saved its life.

A gentleman came to my office a little over a year ago for indigestion, and on thorough examination he was found to have chronic interstitial nephritis. He was given advice about water and hygiene, and was told to take very little medicine. He improved. He was cautioned as to the amount of exercise he should take. Thinking that he was not improving as much as he thought he should, he undertook to do too much, exposed himself, and the indigestion returned. He went to a stomach specialist, the stomach specialist examined him very carefully and found that he had hyperacidity. The specialist is now washing out his stomach and has him on a starvation diet. I do not know what the final outcome will be.

Dr. W. B. Hardman, of Commerce: I did not intend to say anything on this subject. As Dr. Clark has said, we can spend our time profitably in discussing this paper. I think in the State of Georgia we have produced many of the shining lights in the medical profession, and I am

perfectly willing to trust them, even though they make mistakes. I do not blame the specialist for all mistakes and troubles that may arise from the general practitioner sending cases to him and losing sight of the cases. While some accidents may happen and patients may suffer by being sent to specialists, I think the trouble is largely with the general practitioner, who jumps to conclusions in making a diagnosis from one symptom possibly, and then sending the patient to a specialist to be treated for that symptom or disease. I think the worst trouble with the general practitioner is that he does not examine his cases thoroughly. I have seen that time and again where a thorough examination by the general family physician would reveal the cause of the trouble, and get down to the root of the matter, so that the services of a specialist were not needed. Very often a patient consults a doctor, and the doctor allows the patient to make his own diagnosis. Like Dr. Clark spoke about, the man may have stomach trouble, he may have had indigestion, and we do not question patients as much as we should. We do not examine them as thoroughly as we should. We do not find out what a patient has been doing and what his habits are. We do not go into these cases and thoroughly examine them like a lawyer examines, for instance, a witness. When a patient comes to us for examination we should proceed very much as a lawyer examines a witness on the witness-stand, and find out what the trouble is.

Lots of patients are sent to stomach specialists who have incipient chronic nephritis. I have seen treated several cases of that kind, where they developed chronic interstitial nephritis, and that were treated for stomach trouble for a month or two. If we took pains to make a thorough examination in these cases and found out what

the trouble was, many of them would not need to go to specialists. If a patient goes to a stomach specialist who looks only on that one organ and washes out the stomach, treats the patient for stomach trouble entirely, the chances are that the patient will not be benefited. Whose fault is it? Is it the fault of the specialist, or the fault of the general practitioner? I should say it is your fault. You ought to look into your cases and find out what the trouble is, and if you can make an accurate diagnosis; then, if you think it is necessary you may send the patient to a specialist for treatment. If you do not know how to treat a patient properly after having made a diagnosis, it is your duty to get some one else who will help you.

Dr. E. B. Block, of Atlanta: I dislike very much to take up the time of the Society, but I have been very much interested in this subject. Among the chronic conditions that are allowed to go on without attention, the most pronounced of all is arterio-sclerosis. How many old men watch themselves gradually losing flesh, seeing their temporal arteries become tortuous, hard, rigid, who are suffering from slight daily headaches and finding themselves growing prematurely old, without thinking it is anything more than natural old age? One of the greatest errors made by these people is in not consulting physicians to find out why they are as old as they are. They get old far sooner than they should. This chronic condition is one that even physicians themselves are apt to overlook. They do not take it into consideration, while, as we know, it is a remediable trouble.

The subject of errors about going to specialists is, I think, in no case better exemplified than in so-called stomach trouble. Of the cases I have seen, quite as many instances of stomach trouble, so-called, are due to tuberculosis, to floating kidney, to appendicitis, or to Bright's

disease, taken together, as are due to intrinsic diseases of the stomach. We may find in any case slight flexion or marked flexion in acidity of the stomach. At one time we may find hyperchlorhydria, and at other times almost absence of hydrochloric acid. We attach so much importance to this, yet no one speaks of defective secretion of the saliva, or of insufficient saliva. We hear little or nothing about too much or too little secretion of the intestinal juices. This must be of quite as much importance as defective secretions or alteration in the secretions of the stomach. The intestinal juices are of more importance. These cases, when they go to the stomach specialist, are examined for their stomachs alone. An examination is made of the lungs and kidneys, or with a view to finding a floating kidney, causing a breakdown of the whole peritoneum, which goes over the pyloric end of the stomach and causes sagging of the end of the stomach.

There may be dilatation of the stomach, but the physician does not recognize a floating kidney as the cause. Perhaps the urine is not examined with a view to discovering chronic Bright's disease, or the appendix is not examined to see whether appendicitis exists or not. I have seen so many cases that have gone through the hands of stomach specialists and have been subsequently operated on for appendicitis or for floating kidney, and have been relieved only by that means.

Dr. S. A. Visanska, of Atlanta: This discussion reminds me very much of one I heard on proprietary medicines, in that there is some good and some bad in it. We can not reform the world. It is hard to reform physicians, who constitute a great part of the world, especially here in Georgia. When we send a case to a specialist for examination, we must make suggestions, and in the selection of a specialist it requires judgment on the part of the

practitioner. The fault often lies in the fact of who you are selecting as a specialist. He should be a man who treats you and the patient right. We do not examine our cases thoroughly enough. We are too lazy to make an accurate diagnosis in many instances, and as a consequence very often patients go to or are sent to specialists. Of course, there are certain cases that should be sent to a specialist, or at any rate a specialist should be consulted in regard to them. I do not think it is wise to send patients direct to specialists, unless they are surgical cases, or the patients have some disease that requires a special operation. The specialist should be consulted in order to help us in making an accurate diagnosis.

I was taught in a medical college, from which I graduated, that if a man could diagnose a case he could treat it. That is all right to a certain extent. There are many cases, however, that can not be cured, while there are others that can be greatly benefited if not entirely cured. One of the best points in treating any case is to know what we are doing, and very often it is the duty of the general practitioner to call in a specialist in a certain line to assist him in diagnosis. It is also the duty of the specialist to call in the general practitioner, because the general practitioner is better posted on some diseases than is the specialist. Every general practitioner has the reputation of being a specialist in some line. One man is good in treating fevers. He can treat fever cases better than another practitioner. Another man is noted for his skill in treating diseases of the kidney, although he may be a general practitioner. He is a specialist in that line, and is known to the public as such. Of course, a great many errors will be made by the specialist sometimes, because, inasmuch as his attention is confined to one particular line, he be-

comes necessarily narrow in that line, and hence errors in diagnosis will occur.

I recall a case of lobar pneumonia which was diagnosed as appendicitis, and was operated on. The case was looked at purely from a surgical standpoint, and the lungs were not examined at all. It is true the patient had some fever. The patient was operated on, and the next day pneumonia developed.

Dr. McHatton (closing the discussion): I am very much obliged to the members for the free discussion they have given my paper. It is one of the most important subjects before the medical profession in our State today. There can be no question as to where the fault lies. It lies with the general practitioner, the specialist, and I may say more especially with the patient, because it has got to a point now, as I remarked in my paper, where a great many people make their own diagnoses and go directly to a specialist. He is working in that special line and he is liable to accept a diagnosis, with the presumption that somebody else has had charge of the case, without inquiring whether it is such and such a case, or not.

It is impossible to take this subject up in a manner in which it should be, as it is so vast. We can very materially better the condition of our patients by sending them to specialists with our diagnosis, thus assisting the patient and having the specialists inquire in regard to other local lesions, and who is their physician and who has charge of them.

In regard to a patient having tuberculosis without tubercle bacilli being found in the sputum, I will say that while the finding of tubercle bacilli in the sputum is pathognomonic generally of pulmonary tuberculosis, the man who depends upon this evidence entirely will make a serious mistake some time, for the reason that in many

cases we do not find tubercle bacilli in the sputum in cases of tuberculosis. According to one of the latest reports from Germany, in 50 per cent. of cases of tuberculosis in that institution, they did not find tubercle bacilli, and I do not hesitate to make a diagnosis of tuberculosis where I have not been able to find tubercle bacilli after repeated examinations.

In regard to the remarks of Dr. Jones, about making a careful and thorough examination of patients, I think it is very important that we should do this. We should not hesitate to tell patients what is the matter with them. Patients are taking this thing up themselves now, and in this connection I will say I had a beautiful illustration of it since my paper was written.

A lady came into my office—a very intelligent woman—who stands high in educational circles—and after asking her a few questions I told her it would be necessary for me to make an examination of her lungs. She said, "Doctor, I think that will be unnecessary, because my lungs have been examined by Dr. So-and-so and Dr. So-and-so. Each one of them has told me that there is no trouble with them." I said to her, "Madam, you came to me for my opinion, and I will be compelled to examine them." I told her to remove everything but her undervest. I examined her lungs, and found that she had tuberculosis. When I finished the examination she said, "Doctor, I have unintentionally deceived you. I have told you that which was not so. I told you that my lungs were examined by two or three physicians, but I find now that they have never been examined before."

NEEDED LEGISLATION ON PURE FOOD LAWS FOR GEORGIA.

By O. H. BUFORD, M.D., Cartersville.

The State has competent men who test the oil we use for lights, are careful that every barrel comes up to the fire test of 1.40. The interest of the farmers are carefully guarded by the guano inspector, who sees that every sack has all the plant-food the cotton-grower expects for his money, and these are good laws.

Yet, Georgia, with all of her enterprise, is far behind many other States in the protection of her people by allowing foodstuffs that are debarred by other States turned loose on her people with no protection. There is no law to prevent the sale of adulterated flour or tainted meat, and poultry kept in the undrawn state for years in cold storage, reeking with bacteria. Not many of the people understand the danger to health and life in this kind of food.

I quote from investigations of Dr. McArrow, of Oneida, N. Y., on cold-storage poultry. In the slaughter and preparation of poultry for cold-storage and market, the major portion is killed in October and November. After slaughter the feathers are removed and the carcasses packed in barrels and shipped to storage plants without further dressing. The heads, feet and legs, as well as craws full of partially digested food, the decomposing livers and lungs and the intestines with their filth and

poisonous excrement, loaded with various specimens of bacteria, all combine to make valuable weight, and are therefore kept intact. A cold-storage specimen selected from one of the markets of the city of Albany, of twenty-six specimens in the undrawn state, one hen carcass was procured. On the following day we removed a portion of the breast tissues from the fowl, and macerated for a period of two hours in a like quantity of sterilized water, using all aseptic precautions. Ten drops of the fluid portion of the well-stirred mixture was injected into the body of a healthy rabbit. Two hours later the evidences of toxicosis became manifest, and the animal succumbed after a period of forty-two hours.

A second experiment was made to determine the pernicious nature of the contents of the digestive tract of an average fowl in a state of perfect health. A full-grown hen was slaughtered and hung for forty-eight hours in a temperature of 50 degrees. The fowl was then drawn and a portion of the contents of the entrails removed. A solution of one to one hundred, with sterilized water, was made. Six hours allowed for percolation. The clear fluid was decanted, and a healthy rabbit with a normal temperature of 102½ selected; ten drops of decanted solution injected into the rabbit. At the end of two hours temperature 98½; at twentieth hour temperature, 89½, and two hours later animal succumbed—killed in just 22½ hours—through the absorption of ten drops of a one to one hundred sol. of a healthy fowl kept forty-eight hours in an undrawn state. Other tests were made with the same results. This shows that cold-storage does not prevent decomposition, nor kill germs in the undrawn condition.

We now have no laws to prevent, not only impure food,

but all the vast adulterated preparations being dumped on us from other States where they can not be sold.

It devolves on the medical profession to educate the masses to see the importance of having wholesome food to build strong bodies, so they may withstand the inroads of disease. The medical profession of the State are a great power for good if they will realize that they are the watchmen on the towers. While these precautions may not bring wealth to the doctor, they will bring health to the people, and their children will rise up and call you blessed.

Our State should not be behind in this important matter. It can be said of the profession, that they never unite on any measure that is not for the interest of the general public. I believe, for this reason, they could do good work in bringing this question before the people. Let Georgia not wait for a general law of the United States, for this may take years to come about. Let others do as they may; our grand old State should look to the interest of her own people, regardless of the power and influence brought to bear. If we have not lawyers and doctors in our legislature who will give us the right kind of laws, let us send others.

DISCUSSION ON DR. BUFORD'S PAPER.

Dr. Henry R. Slack, of LaGrange: I have been very much interested in Dr. Buford's paper, with reference to pure food in Georgia. Some ten years ago I was chemist for the State Board of Pharmacy, and at that time in the Senate a bill was introduced appropriating $1,000 for the use of the State Board of Pharmacy in analyzing drugs and medicines sold in the State, to see if they came up to the required standard or not. We have a law in Georgia to regulate the purity of drugs. It came under the head

of condiments, and of 32 brands of mustard found in the State only two were pure; the other 30 were found adulterated. We only found two brands of red pepper that were pure. Unfortunately, we could not reach a single one of these manufacturers, because the mustard and pepper were manufactured outside of the State. All we could do was to notify these dealers that their goods were adulterated.

While a State law would be beneficial, no doubt, still I think this body ought to go on record as being in favor of investigating a special law in regard to pure foods, because it then could be tried in the United States courts, and we could reach those who ship these adulterated goods into Georgia.

We found a firm in Chattanooga that was manufacturing adulterated drugs and sending them into North Georgia at a much lower rate than they could obtain in the State of Georgia, because they were protected from prosecution. These manufacturers carried on a very prosperous business. I am heartily in favor of a special law against the adulteration of drugs.

Dr. St. J. B. Graham, of Savannah: I have been very much interested in this paper, as it is in the right direction. A law at present is under consideration in Washington with regard to pure foods, and one unworthy Senator stopped the game for a while in some way or another. I believe there should be a universal law in this country, as there is in the Empire of Germany, which should not only apply to pure foods, but pure drinks and pure water. There is no polluted water supplied in the whole Empire of Germany, if it is known, and all sewage and drainage in Germany are required to go through sewage plants before being disposed of. It is just as important to have pure water, and pure whiskey, and pure cocktails, not

peruna, if you please, as it is to have pure foods. How are we going to get it? Through enactment of the Legislature, for if our Society should demand it they can not refuse it. It is absolutely essential in caring for our patients that they should have pure food and water, as these go a long way toward the prevention of disease and in making us a better and more powerful nation than we already are.

RADIUM.

By F. G. HODGSON, M.D., Atlanta.

The action of X-rays in rendering bodies transparent was first described by Roentgen in 1895. This was followed by the discovery of certain rays given off from the metal uranium, by Becquerel, in 1896. These discoveries were much talked of by the scientists, and Mme. Curie, in Paris, became especially interested, and began her investigations. She found that pitchblende, composed chiefly of uranium and thorium, gave off Becquerel rays. She separated the uranium from the pitchblende and found that the remaining mass was more radio-active than the uranium. Then with aid of her husband, Professor Curie, she continued her experiments, reducing the mass to simpler compounds, each time selecting the most radio-active portion until they finally separated a very active substance in the form of a chloride to which they gave the name "Radium." The element itself has not been isolated, but Mme. Curie calculated its atomic weight to be 225, thus showing it to be one of the heaviest metals known, and placing it in the group with magnesium, calcium, strontium and barium, according to the periodic law.

Mme. Curie took two tons of pitchblende and after several months of repeated precipitation, filtration, crystallization and decantation obtained about 1-10 gr. of radium chloride—just 1-10 gr. from over 4,000 pounds; this is rarer than the gold in sea water.

OCCURRENCE.

Radium is found chiefly in association with uranium in the pitchblende found in Bohemia and a few places in Germany. The supply is very limited. The immense difficulty of isolation and the skill required make it one of the most expensive substances known. The increased demand has also raised the price considerably. One gram would be worth about $80,000. Some medicinal springs and baths are reported to contain radium or radio-active substances to account for their wonderful healing properties, but they contain only very minute quantities. Careful search is being made in this and other countries for radium-bearing ores, but so far with no result.

PHYSICAL AND CHEMICAL PROPERTIES.

The bromide of radium is the salt generally used. It occurs as small white crystals, is soluble in water. It gives a carmine color to a Bunsen flame. It has a characteristic spectrum. Its properties are almost identical with the barium salt. It gives off heat continuously without any appreciable change or diminution. One gram maintains itself 5 C. above the surrounding air; one gram emits energy equal to about 100 gram-calories per hour. Radium salt in solution will, after a short time, give off the same quantity of heat as the dry salt.

The most interesting property of radium is the spontaneous giving off of rays known respectively as the *A*, *B* and *Γ* rays. *A-rays* are very minute particles of matter about twice the mass of an hydrogen atom and traveling at the enormous rate of 25,000,000 meters or 15,500 miles per second. You can imagine that the momentum of these particles, though minute, must be considerable.

They are not very penetrating, being stopped by a thin mica plate or glass container. The particles are positively charged electrically, and will discharge an electroscope. They may be deflected by a magnet toward the negative pole.

B-rays are still more minute particles of matter, being only 1-1000 the mass of an hydrogen atom. They travel even more swiftly, traversing about 150,000,000 meters, or about 100,000 miles per second—this approaches the swiftness of light. If unimpeded, a particle would travel about four times around the earth in a second. These particles are negatively charged with electricity, and are deflected by a magnet in the opposite direction, and more strongly than the *A*-rays. They are more penetrating, easily passing through a glass container, and penetrate the skin for about half an inch. They are considered to be identical with the cathode rays of a Crook's tube. They are sometimes called corpuscles or electrons. They are probably the most valuable therapeutically, and the burning of the skin is due to them.

T-rays are probably not particles of matter at all, but are undulations of ether. They resemble very closely the X-rays given off from a hard or high vacuum tube. They travel with enormous velocity, and are very penetrating; they will pass through a foot of solid iron. Bones offer practically no resistance to them. They do not discharge an electroscope and are not deflected by a magnet.

When we consider the minute quantities of radium which are used experimentally (usually a fraction of a grain, and that impure,) it is easy to let the imagination play as to what could be done with large quantities.

It has been suggested that with a pound the house could be heated and the cooking done for a large family for generations, or with a sufficient quantity a transat-

lantic steamer could be driven back and forth across the ocean indefinitely.

The combined effects of these radiations are:

1. *Fluorescence and Luminosity.* This is beautifully shown in a little instrument invented by Crook, and known as the spinthariscope. This consists of a cylindrical brass tube about an inch in diameter, by three inches long. At one end is a circular fluorescent screen of calcium fluoride or zinc sulphide, and in front of this a very minute particle of radium on a movable arrow. At the other end of the tube is an adjustable lens. Upon going into a dark room and focusing the lens upon the screen one can see minute sparks flying off in every direction, resembling a miniature shower of shooting stars. This is due to the A-rays impinging upon the screen. Phosphorescence can also be observed with any fluoroscope, but you only get a light and not the sparks observed in the spinthariscope. Diamonds, barium-platinocyanide, willemite, kunzite and zinc sulphide are all made phosphorescent.

2. *Coloration of Bodies.* Diamonds change color and glass is turned blue in the prolonged presence of radium.

3. *Chemical and Photographic Effect.* Paper becomes brittle and turns dark after prolonged exposure. Ozone is formed in the air around radium. The rays are in no way affected by extreme heat or cold. A photographic plate is darkened by the rays, even through considerable thickness of dark paper; in this manner the image of various articles can be reproduced on the plate similar to those made by X-rays, but there is not the same sharpness of outline and bones can not be outlined.

4. *Physiological and Pathological Effects.* Seeds exposed to radium will be stunted in growth or killed, depending upon the length of exposure. It takes about a

week to kill the mustard seed. Small mice and young guinea pigs, after several hours' exposure, show nervous weakness, then paralysis and finally death; their hair will fall out and may return gray, as was shown by Roux in Paris. Human skin is burned, many pathological growths are affected and skin lesions cured—but this will be discussed later.

5. *Electrical Effects.* The rays will discharge an electroscope due to the ionization of the surrounding air. If the spark gap of an induction coil is so arranged that the spark will not jump across, then some radium be brought near the coil the spark will jump across easily.

Radium, besides giving off continually heat and three different kinds of rays, has also another remarkable property; it gives off a *gaseous emanation.* This can be collected by putting some radium in a glass bulb and connecting it with another bulb by means of a glass tube. The emanation is given off more rapidly by heating or dissolving the radium in water and passing air through it. After the emanation is driven off into the other bulb it can be examined. It is found to be temporarily radio-active, and has the power of inducing temporary activity in other bodies. The radium loses some of its radio-activity when so treated, but after a short time regains its normal strength, and strange to say it regains its activity at exactly the same rate that the emanation loses its activity. This emanation is temporarily radio-active, and may cause phosphorescence in bodies and discharge an electroscope. It acts like a gas in that it may be condensed by exposure to the extreme cold of liquid air. After the lapse of several weeks a most wonderful and unheard of transformation occurs—it has been shown by the noted chemist, Ramsay, that this emanation of radium has been transmitted into another element, helium,

and gives the characteristic spectrum of that element. If this be true, it is the only instance known to man in which one so-called element has been converted into another; this makes the hope of the old alchemists seem a real possibility.

The amount of radio-activity of a specimen of radium is based upon the radio-activity of an equal mass or uranium used as an unit. Specimens vary in activity from 240 to 1,500,000 units. The activity of a specimen immediately after preparation is only about one-quarter its final value; it increases in strength for a month when kept dry in a closed container. The activity is determined in several ways, e. g.:

1. The rapidity with which it discharges an electroscope due to the ionization of the surrounding air.

2. The effect upon a photographic plate enclosed in dark paper.

3. The way it illuminates a phosphorescent screen.

Luminosity in the dark is not a test of activity—very impure specimens may give off considerable light.

Induced or Excited Radio-activity. A large number of bodies when left directly exposed to the radium salt become temporarily radio-active. This does not occur when the radium is enclosed in a sealed tube and is due to the effect of the emanation. So a tube of radium placed in a solution does not render that solution active. Many fake radium cures are manufactured in this way, and many of the so-called radium cancer cures sold at enormous prices have never been near radium. The amount of radio-activity induced upon a given area is independent of the substance acted upon. All induced radio-activity decays very rapidly, falling to half its value in thirty minutes, so it can not be of very much practical value to physicians.

The source of the continued and apparently undiminishing energy has been the subject of much discussion. The most generally accepted view is that it is derived from a slight disintegration of the radium atom which must then be very complex. A few hold that it must get its energy from some external source. Recent observations tend to show that the sun must contain radium to account for the amount of heat given out and the slow rate of cooling of that body; also that the quantity of radium in the earth accounts for its present temperature in spite of the ages it has been in cooling.

ACTION OF RADIUM UPON LIVING TISSUES.

Gross effects.—Take, for example, a specimen of pure radium bromide, rated at about 1,500,000 activity and place it upon the skin in one place for five minutes, another place half an hour, another two hours; there will be no immediate effects upon the skin, but after about two weeks the five-minute spot will turn red and remain in that condition about two weeks, then gradually get well; any hair present will fall out. The half-hour spot will begin to redden sooner, will then vesicate and may go on to ulceration, and will heal in about a month. The two-hour spot will take effect still sooner, will vesicate, then ulcerate and may take several months to heal, and leaves an atrophic looking skin. Prof. Curie carried a specimen in his vest pocket for several hours, and as a result had a bad ulcer which took months to heal. So according to the length of exposure we get erythema, dermatitis, vesiculation, ulceration and necrosis. Any hair present will fall out, but will return if the burn is not too deep. After healing there may be a scar, or atrophy or pigmentation or even angiectasis has been reported. So we see the results on the normal skin closely resemble those of the X-rays.

Radium produces a sensation of light in eyes that are partially blind, but no effect when the retina is destroyed. This gave rise to the report that radium would cause the blind to see.

Ova and embryos of young frogs and other animals were exposed to radium for varying lengths of time; after a latent period cell division was inhibited and differentiation and growth was retarded, just as was the case with the seeds—the rays seem to have a selective action on young and rapidly-growing cells.

Microscopical Effects.—In a patient to be operated upon for carcinoma of the breast, Dr. Robert Abbe applied radium to the sound skin, to the cancerous area, and in one place buried the radium tube under the skin within the tumor for several hours. After amputation the breast was given to Dr. F. C. Wood and he reported as follows:

1. On the skin a superficial necrosis always takes place, the longer the application the deeper the devitalization of the cells.

2. Leucocyte infiltration shows around all vessels and nerves.

3. Where an area of cancer underlies the skin a softening and devitalization of the central cells of nests nearest the radium takes place.

4. Where the radium was thrust into the cancer an area of complete destruction of cancer cells for not more than a quarter of an inch takes place. A recurrent nodule of cancer was exposed to strong radium twenty times during three months and diminished to one-third its former size. It was then excised and upon examination showed marked fibrous hyperplasia among the cancer cells. Abbe says that those malignant cells which escape destruction or retrograde change show a striking quiescence which

may mean the death of the vital force which makes them malignant. In this connection we can not fail to be reminded of the seeds exposed to radium which fail to germinate.

Bacterial Effect.—Radium has been found to kill various germs. B. Typhosus; B. of Cholera; B. Prodigeosus and others were killed. The radium must, however, be applied very close (half mm.) and for at least twenty-four hours. It is of no practical value in cleansing an infected wound. Radium burns are, however, very resistant to infection, so radium seems to increase the resisting power of the cells.

Therapeutic Value.—Radium has been found to be of value mainly along the same line of cases as the X-rays. This was to be expected from the similarity of effect upon the healthy skin. It has been used with best results in cases of lupus vulgaris, superficial cancerous growths, and various skin lesions. I have collected from various sources the following cases and results of radium treatment:

Mammary cancers: 0 cured, 3 improved, 1 unimproved.

Epidermoid cancers: 11 cured, 12 improved.

Rodent ulcers: 2 cured, 3 improved.

Lupus vulgaris: 4 cured.

One keloid, 1 psoriasis, 2 chronic eczemas, 9 acne vulgaris improved or cured.

McLeod in the *British Medical Journal* reports:

Two lupus vulgaris cured, 1 lupus verrucosa improved, 1 rodent ulcer cured. Exner of Vienna reports marked improvement in a melano-sarcoma, temporary improvement in symptoms and increase in calibre of 3 cases of cancer of the esophagus.

Max Einhorn, of New York reports 9 cases of cancer of the esophagus treated by radium. The radium was

introduced in a capsule on the end of a flexible bougie and held in contact with the stricture. He calls this instrument a radiodiaphane. Of the 9 cases so treated, 6 showed increase in calibre of the esophagus and greater ease in taking food. One patient improved markedly in weight. In 3 cases no improvement was noted, due to irregularity in treatment or to insufficient time having elapsed. Einhorn does not claim to cure these cases, but any relief to such hopeless cases is to be welcomed as a step in advance.

Lassar, of Berlin, is very enthusiastic in his praise of radium in the cure of certain skin lesions, but Bulckley, of New York, thinks X-rays are just as efficient.

Ordinary warts are easily removed by one to three exposures of half hour each. Port wine marks will become whiter after exposures and angiomata have been cured.

Abbe, of New York, reports some excellent results from radium treatments. Cases of lupus, rodent ulcer, epithelioma, verruca and sarcoma have been cured by him. Also some improvement in recurrent cancerous nodules and inoperable cancer of the cervix uteri. A remarkable case of his was a giant cell sarcoma of the lower jaw about the size of a walnut. He thrust his radium into the mass on several occasions, and it began to diminish in size and finally disappeared and has remained cured for about two years. He had also marked improvement in a large exophthalmic goitre by plunging the radium tube into the goitre. The tumor at the end of a month was reduced to half its size and other symptoms improved.

Pusey, of Chicago, sums up the indications for radium as—

1. Inflammatory diseases of the skin as eczema, psoriasis, lichen planus.

2. Bacterial diseases of the skin: Acne, sycosia, lupus, blastomyces.

3. To cause destruction of tissues of low resistance: Carcinoma, sarcoma, lupus and warts.

The *London Lancet,* March 26, 1904, reports two cases of tuberculous ulcers of the throat cured. It also recommends radium for tuberculosis of the superficial bones of the hand and foot, sternum and ribs.

Beck, in the *Chicago Medical Record,* December 15, 1905, reports cures in a case of tuberculous ulcer of the septum nasi, and in a case of sycosis. Relief to pain in a case of sarcoma pharyngis. Pain was also relieved in neuralgic cases and marked relief to the pains of tabes dorsalis. A secondary tuberculosis of the larynx and cancer of the larynx and cervical glands were treated without result.

Czerney's clinic in Berlin reports in the *Deutsch Medical Wochens,* volume 30, No. 42, two naevi, five angioma, seven lupus cured; five carcinoma and one melanosarcoma not cured.

Muncher, Medical Wochens, volume 52, No. 34. Bacteria are killed by exposure to radium and their toxins are rendered inert. This was proved by injections into rabbits.

Mitteilung aus den Grenzegebieten, volume 14, No. 5. Two large angiomata were cured by one hour exposure. In two weeks a scab formed, after three weeks there was a pink scar, and after six weeks the skin appeared normal. No spermatozoa were found in the testicle or epididymus of a guinea pig after radium had been attached to that organ for twenty-for hours.

Riforma Medica, Naples, volume 21, No. 15. Tizzoni reports that animals inoculated with rabies would recover after exposure to radium while controle animals

would die. He also says that rabies virus exposed to radium was rendered innocuous, and more than that, it could be converted into a vaccine.

Robarts, in the *Journal of Physical Therapy,* February, 1906, reports two cases of bleeding piles and three cases of fissure in ano cured by radium and dilatation.

My own experience has been very limited. I have removed several warts by half-hour exposure, causing no pain and no scar. I have under treatment a beginning swelling of the thyroid in a young girl, which has diminished slightly under three applications, but it is too early to make a report on this case. I have noted the retardation of growth in mustard seeds exposed to the rays, and have confirmed a number of the photographic, phosphorescent and electrical phenomena.

METHOD OF USE.

On the external parts the radium is applied directly to the affected part in a small glass tube, the surrounding healthy parts being protected by a thin layer of lead. The tube may be sterilized and inserted into tumors. A large variety of applicators are in use for treating the various mucous cavities. The length of exposure varies from twenty minutes to twenty-four hours inside tumors, the average exposure is half to one hour. These are repeated two or three times a week if necessary.

CONCLUSIONS.

In radium we have a substance of immense interest to both scientists and the medical profession. Its action resembles closely the X-rays, but it has the advantage of the ease with which it can be carried around and used. It is of especial use in the mucous cavities, such as the nose, mouth, throat, esophagus, vagina,

uterus and rectum. It often succeeds where the X-rays have failed. It is of undoubted value in lupus, rodent ulcer, epitheliomata, warts and some cases of sarcoma, and many forms of skin disease. It is a powerful agent and has performed some wonderful cures. It should be given a thorough trial. If larger quantities can be procured and its cost diminished it will surely be of great service to mankind.

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ENTEROPTOSIS.

By L. AMSTER, M.D., Atlanta.

Enteroptosis, i. e., falling of the visceral contents, is in many cases the cause of nervous dyspepsia and neurasthenia, and the failure to relieve these conditions is often due to the fact that the underlying cause is not recognized.

The diagnosis of enteroptosis ought to present no difficulties to the general practitioner, if he takes the trouble to make a thorough physical examination.

For an exhaustive treatise on this subject, I refer you to Hemmeter's text-book on Diseases of the Stomach. I will confine myself to a brief sketch and those points which helped me in diagnosing and treating my cases.

Glenard was the first who recognized the intimate relationship existing between certain dyspeptic and neurasthenic conditions with the falling or dropping of certain abdominal organs, comprising prolapse of the stomach (gastroptosis), of the intestine (enteroptosis), of the kidney (nephroptosis), of the spleen (splenoptosis), of the liver (hepatoptosis). One or more of these conditions may exist.

The cause is looseness of the attachments of the different visceral organs and consequent relaxation of the abdominal wall. It is commonly known as enteroptosis, or Glenard's disease.

Stiller, who made further studies on the subject, recognized the fact that there exists a hereditary taint, predisposing some people to enteroptosis, which develops af-

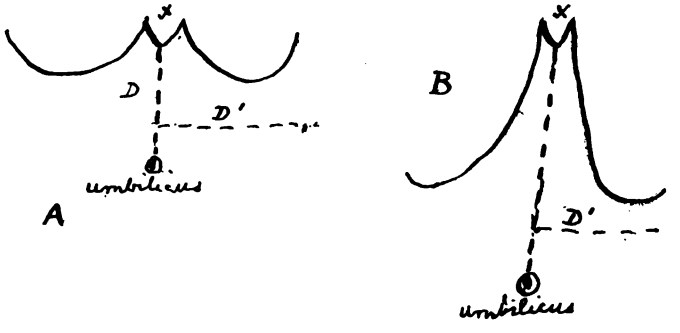
ter some exciting cause. The hereditary predisposition is called "Habitus Enteroptoticus." These enteroptotic people usually possess a general weak constitution, which he calls "Asthenia Universalis Congenita."

Stiller also called attention to the fact that the tenth rib in these people is loose and floating. Normally this is not the case. This floating tenth rib, known as "costa decima of Stiller," is found in phthisis and enteroptosis, and though some authors deny the reliability of this stigma, still, wherever found, phthisis or enteroptosis ought to be suspected.

Most text-books, while mentioning this congenital enteroptotic habitus, do not give a clear description of it. As the recognition of it facilitates a correct diagnosis, I will endeavor to explain it in the manner I have seen it demonstrated in Conheim's Polyclinic at Berlin.

The main characteristics of the enteroptotic habitus are as follows:

A long, narrow, flat thorax. The angle of the ribs pointed so that the xiphoid process forms the apex of an acute angle.



While this angle in the normal type is 120 degrees or more, it descends in the enteroptotic type often to 60 degrees.

There exists a looseness of the cartilages of the ribs, so that the cartilages of the tenth ribs fluctuate.

The distance from the xiphoid cartilage to the umbilicus is abnormally long. The diameter of the episgastrium and the right and left hypochondrium is very much longer than it is broad, while in the normal type it is broader than long.

People with this enteroptotic build are especially predisposed to functional disturbances of the gastro-intestinal tract.

In women with hereditary enteroptosis, the muscular walls become weakened after repeated childbirths, or too tight lacing, the visceral contents lose their support and the stomach descends, the large curvature reaching below the umbilicus, without the organ being dilated.

It is well to remember—and this mistake is frequently made—that a prolapsed stomach, with the large curvature reaching far below the umbilicus, does not necessarily mean dilatation of the stomach. Often the kidneys, especially the right kidney, and the intestines, especially the transverse colon, the liver and the spleen participate in this ptosis and all the manifold dyspeptic and neurasthenic symptoms develop.

Enteroptosis can also be acquired by people of normal habitus: Tight lacing, dresses that constrict the waist, unduly repeated childbirths, and any illness having for its effect a rapid loss of abdominal fat and muscle, may result in enteroptosis.

The diagnosis, as mentioned before, can easily be made if we bear in mind the facts enumerated above. The most superficial inspection and palpation will often reveal the condition.

The contour of the stomach can be made out after the administration of bicarb. soda and tartaric acid, a tea-

spoonful of each dissolved in a little water and given to the patient one after the other on an empty stomach. The gas generated hereby distends the stomach and indicates how far the organ has descended.

The splashing sound, auscultatory percussion and gastro-diaphany can also be resorted to. I consider the gas test quite satisfactory. The position of the other visceral organs can be made out by palpation.

Glenard advises that the physician stand behind the patient, and lifting the abdomen with the palms of both hands, if enteroptosis is present, the patient will feel a sense of comfort and relief.

The *prognosis* of enteroptosis as to relief is very good, not so as to a cure. But inasmuch as we are not called upon to cure conditions, which do not disturb the physical well-being, and inasmuch as we can give these patients relief from their symptoms, we may consider the prognosis altogether as favorable.

To mention all the *symptoms* of enteroptosis would be to enumerate the infinite variety of symptoms comprised in nervous dyspepsia—atony of the stomach and intestine, neurasthenia, malnutrition, anemia, constipation, mucus colitis, etc.

TREATMENT.

Prophylaxis: The physician should caution patients with hereditary enteroptotic tendency against tight-lacing and garments that contract the waist. As it is useless to decry the fashionable corset altogether, we must compromise on a corset built on rational principles. After confinement, a well-applied abdominal bandage should be worn. Proper diet, with plenty of fresh air and sunshine, can not be too strongly insisted on.

The indications for the treatment of enteroptosis are:

To support the prolapsed visceral organs by mechanical devices and by such diet and medicines as tend to tone and build up the body.

Experience teaches that many of these patients are best treated at institutions, removed from their families and household responsibilities.

In some advanced cases showing emaciation, anemia and nervous exhaustion, it is necessary to put them to bed for a time and treat them on the principles of the Weir-Mitchell rest cure.

A few weeks of treatment in an institution accomplishes more than prolonged treatment at home.

Rest in bed relieves the ptosis and traction on the visceral organs and facilitates the rest of the treatment.

The mechanical treatment consists in the application of a well-fitting abdominal bandage. One made to order after measuring is preferable to a ready-made one, which is rarely satisfactory. The moleskin adhesive plaster bandage (Rose) has given many of my patients great relief, affording them at once a sense of comfort.

(As the application of the bandage is better demonstrated than described, I will demonstrate it at the close of the reading of this paper.)

The only objection to the support is that it sometimes irritates the skin. I have had patients, however, wear it for months without producing any dermatitis. The moleskin plaster is impervious to water and there is no objection to the patient taking his regular baths.

Massage of the abdomen from five to ten minutes daily is of great utility. The different manipulations are simple and can be easily acquired by the physician. I never leave my patient to masseurs. Personal interest and attention on the part of the physician has a beneficial psychic effect on the patient.

The relaxation of the abdominal wall can also be counteracted by electricity. The static current has given me satisfactory results—the plate electrode with positive polarity to the abdomen. Some prefer the faradic current—external or intragastric. The static current is pleasant and the patient does not have to swallow electrodes, a procedure often very objectionable to the patient.

Abdominal gymnastics also strengthens the muscular wall. A simple way to execute it is to instruct the patient to lie down flat on a couch or the floor, then gradually and slowly raise his trunk into a vertical position, without moving his extremities, the exercise to be repeated ten to twenty times daily.

Another valuable aid to the treatment is hydrotherapeutic measures. The cold douche over the abdomen, Priesnitz or alcohol applications over the abdomen are simple and effective.

DIET.

The diet should be nutritious and fattening. I find many of these patients underfed amounting to emaciation. They claim that they diet themselves, when in fact they starve themselves, they are afraid to eat. I insist on their taking plenty of food, and even if they are uncomfortable at first, the stomach soon tolerates more liberal rations. Of course the selection of food and the mode of preparation has to be in accordance whether we have to deal with atony, hyperchlorhydria or anacidity. Never give vague directions as to diet nor stereotyped printed diet-lists, but write out the patient's diet-list, enumerating every article of food you wish them to have.

Experience teaches that a gastro-entero or nephroptosis is materially helped by the accumulation of fat. Liberal quantities of butter and cream should be prescribed.

MEDICINAL TREATMENT.

Tonics, stomachics as iron, arsenic and hydrochloric acid, tincture nuxvomica and the fluid extract of Condurango in liberal doses.

Bismutose or the subcarbonate of bismuth in teaspoonful doses, t. i. d., sometimes combined with the salicylate of magnesia to counteract irritability and fermentation.

For the constipation there is nothing as efficacious as massage and rectal injections of one-half tumblerful of warm oil administered through a colon tube at bedtime, and to be retained overnight, as advised by Fleiner.

Gastro-intestinal surgery has made such remarkable strides that there seems to be a field for this art in cases that can not be relieved by approved medical measures.

THE TREATMENT OF NEURITIS AND OTHER CONGESTIVE CONDITIONS WITH THE STATIC MODALITIES.

By R. P. IZLAR, M.D., Waycross.

Pathological conditions are characterized to a greater or less degree by congestive hyperemia which arises from circulatory disturbances, due to pressure, trauma, obstruction, paralysis, etc., of the muscular coats of the blood-vessels. This hyperemia may be active or passive, and if the stasis is allowed to persist, tissue death results and repair is deferred. The process of regeneration may be delayed by many causes. In both types of hyperemia the indications are apparent—that the static modalities being of great potential, high frequency and small quantity removes obstacles to regeneration and promotes normal tissue proliferation, can be demonstrated by experience. The properties which effect the results to which I will refer are due to the penetrating vibrations and consequent induction of contraction of the muscles and structures surrounding the congested area, and coats of blood vessels, which actions are peculiar to electricity. The contractions give the impetus which starts on the blood stream and overcomes local stasis, and I am certain that no other agent can produce the degree of intensity, frequency or penetration which is obtained from the static modalities, which has its frequency and amplitude controlled by the spark-gap, associated with a current output which can be

increased or diminished. The induction of local activity, by overcoming stasis, contributes in all inflammatory conditions to the removal of the cause.

Clinical experience with many conditions has demonstrated the following facts (I quote largely from Dr. W. B. Snow, of New York, whom many of you may know):

The static modalities remove stasis, promote absorption of plasma, thereby lessening pain and swelling, removing deposits of fibrin in the vicinity of joints, inducing reabsorption of organic and inorganic salts which have become locked up in the tissue, the result of faulty metabolism; they produce a general equalization of the blood currents, the lowering of arterial tension, which lessens the probability of local congestion. There is positive proof, that a local expression of blood takes place by the production of mass contraction and contraction of the muscular walls of the arterioles.

Therapeutically the static modalities meet in most satisfactory manner the indications in inflammatory conditions not characterized by the presence of micro-organisms, some foreign or necrosed substance: To the effect upon acute congestions we turn from the greatest triumph of modern electro-therapeutics.

The modalities influencing these conditions are the wave current brush discharge and sparks.

Normal functional activity is induced, stasis is promptly removed. There is a marked lowering of arterial tension, which is most prompt, when sparks are administered and most prolonged after the administration of the wave-current.

Pain promptly disappears from the first, and will not return if administrations are frequent enough to control the congestion.

Most of the painful neuroses can be relieved and a

larger part of them cured by the use of static electricity, if they have not become too chronic and there is no organic lesion.

The greatest obstacle to treatment is a thick layer of fat between the surface and the seat of trouble. The various types of neuritis and congestions arise from exposure to cold or heat, trauma, strains or from complicating inflammatory conditions. Any nerve may become the seat of neuritis. Neuritis is the condition present in so many so-called neuralgias and myalgias.

Neuritis of the sciatic is the most common and stubborn of all forms when treated by methods other than static. Before outlining the method of diagnosis, mode of treatment, bridging, etc., I will ask you to bear in mind that when treating regions of congestion, muscular contractions of the coats of the vessels and the muscles surrounding them induce normal circulation and overcome stasis by forcing on blood stream.

The diagnosis of the site of a neuritis, except within the cavities, is easily made by applying spark, the brush discharge or high frequency discharges with glass vacuum electrodes along the course of the nerve, noting the patient's facial expression, thereby outlining where the pain begins and ends, at the same time comparing the effect on the opposite side of the body. A spark over a nerve is always painful, but when applied over the part of the nerve which is the seat of a neuritis, the pain is intense. The prognosis of uncomplicated neuritis, when accessible, is very good.

The treatment will vary with the condition of the case. In acute cases, when the patient is not too fat, the wave-current will effect a cure in a few days. The mode of application of wave-current, when effected region is located, is as follows: Place over same an electrode of soft

metal 4x4 (rarely larger) and see that it is firmly held to the surface, otherwise it will burn. The current is increased by lengthening the spark-gap and it should be increased until sedation is complete. Seance should last 15 to 20 minutes. This sedation will, in all probability, last for 24 hours, and if the treatments are given daily a cure will result in a short time. The matter of bridging should be carefully looked after; never allow your patient to go without treatment long enough to have a return of his trouble. All acute recent cases should be treated daily, if the pain returns before next treatment, why, treat twice daily. In cases of longer standing the wave-current may fail to relieve your patient; if such be the case, apply long sparks over the effected nerve until sedation is complete. Have the patient test the muscles near the effected nerve and keep your sparks going until relief is complete. The brush discharge may assist in relieving those who are not too fat, or cases that are not too chronic.

Always make the spark-gap as long as possible without causing muscular contractions in the effected area. When using the wave-current, the same general plan will apply to the treatment of all cases of neuritis.

It will be impossible for me to describe to you in detail the methods of applying the different static modalities. The success in treatment will depend upon the skill of application. This you can only gain by personal experience, but I will make the statement, that it will be impossible for you to do any harm with the static modalities. The potential is high, but the quantity of electricity is so small that we have no instrument delicate enough to measure it.

Those who decry the use of static electricity do so from ignorance. They know very little, if anything, concerning the manner of administration, etc.

In a paper limited, as this must be, I can tell you very little of the various uses of the static machine, and those of you who wish to pursue the science further must do so with the help of those who have made it a study, ever keeping in mind that the science is still in its infancy. If you will bear with me a little longer, I'll give you (not in detail, however,) the history, treatment and results in a few cases of neuritis and congestion taken from my note-book for the past two months, not selected, but taken in their regular order as treated at our office.

Case No. 1.—Mrs. J. C. E., white, female, age about thirty-eight. History: Inability to use right arm and hand on account of pain; pain worse at night when arms were at rest; could not sleep; thought she had rheumatism. This condition of affairs had persisted for five weeks, although anti-rheumatic remedies had been given. Diagnosis: Neuritis (brachial). She applied for treatment February 4th. On this day she received the brush discharge for 15 minutes, and 2-inch sparks for 5 minutes, with complete relief. She was treated again on the 5th and 6th, and discharged cured. There has been no return of the trouble.

Case No. 2.—C. J., white, male, age forty. Applied for treatment February 8th. History: For the past nine weeks he had suffered with pain in the left arm, shoulder and hand; inability to use same at his work on account of pain; the arm feels heavy and a feeling of pins and needles sticking in the palm of hand. Diagnosis: Brachial neuritis. He was given the same treatment as the first case, with complete relief after first treatment. He received the treatment daily until 13th, when he failed to show up at office. I saw him on the streets and he said he was all o.k. But I knew better than he. I knew that his trouble would return, as his treatment had not been con-

tinued long enough. February 26th, he again applied for treatment, his old trouble having returned. The same treatment was given him with complete relief. He continued treatment until March 12th. I then lost sight of him. This case will illustrate the necessity of continued treatment in chronic cases.

Case No. 8.—Mrs. W. D. O., white, female, age twenty-five. Applied for treatment March 1st. Severe pain in right shoulder of three week's duration; no relief from medication. Diagnosis: Neuritis. She received three treatments, same as Case No. 2, and was discharged cured. No return of trouble to this date.

Case No. 15.—Geo. W., white, male, age forty-eight. Neuritis, sacral, of three or four year's standing. Comes periodically; pain in back so great that patient could not stoop down or sleep. Ex. urine, negative: This patient received the wave-current to sacral region for 20 minutes with metal electrode 6x6, and then 3-inch sparks for 5 minutes over same region, avoiding bony prominences. This treatment was instituted February 14th. First treatment gave complete relief. He received treatment daily until February 27th. He then discontinued treatment, saying that he was well, and no persuasion could induce him to continue. He will have a return of his trouble and apply for treatment again. No chronic trouble of such lengthy duration can be relieved in a few days.

Case No. 18.—H. C., white, male, age fifty. Applied for treatment March 3d, with the following history: Pain in right scapular region extending to pectoral region, of such a character as to prevent the patient following his avocation. He gives a history of recurrent attacks. Present attacks of one weeks' standing. Diagnosis: Brachial neuritis. Treatment: Brush discharge for 15 minutes and 3-inch spark for 3 minutes. Complete relief. He did not return for further treatment, as his trouble did not return.

Case No. 19.—Mrs. S., white, female, age forty-eight. Diagnosis: Spinal neuritis. She applied for treatment March 15th, complaining of pain and weakness in left thorax, arm, hand and leg. She also complained of "great heart weakness" (I use the patient's own words). She is always afraid that she will drop articles when she attempts to pick them up. This condition of affairs has persisted for months. After about two week's treatment with the brush discharge there was no improvement. March 27th she was given the wave-current for 20 minutes, a metal spinal electrode being used. Then she was given sparks over effected area, with complete relief. She is still under treatment and improving daily.

I could tire you with the history of such cases and the favorable results obtained from treatment with the static modalities, but I will refrain from doing so, and will only present to your notice a few cases of other congestive conditions which have been favorably influenced.

Case No. 3.—Enlarged and painful prostatic glands, gonorrheal in origin, of one year's standing. This patient applied for treatment February 8th. I began the use of the wave-current, using a metal, rectal electrode with a three to four-inch spark-gap for 20 minutes. This treatment was given daily until the 12th. He was then much improved, prostate reduced very much in size and no pain. I lost sight of him until the 16th. He stated that he had been away, but was doing nicely. Treatment was again instituted and continued every other day to this date, April 10th. Patient is still under treatment, but he is on the highroad to recovery, and prostate is about normal and he has no pain.

Case No. 11.—Same condition. The treatment began March 6th. The prostate very much enlarged and very painful. He was treated daily until April 10th. Exami-

nation revealed the fact that the glands were about normal, and that they were not in the least tender. He will be discharged in a few days.

Case No. 7.—This patient had gonorrhea about two years ago. Examination showed prostate to be very much enlarged and intensely sensitive. He was given the same treatment as the preceding cases, and he steadily improved. Treatment began February 16th, and continued daily to February 26th, when he was discharged, the prostatic enlargement having disappeared, as well as all sensitiveness.

In the treatment of sprains and fractures the brush discharge will relieve congestion, pain, etc., and reduce swelling. It can be applied after the injured part has been attended by the surgeon, as the following case will illustrate:

Mr. C. sustained a fracture of both bones of the left leg just above ankle joint. After wearing a plaster cast for six weeks the part was very much swollen, and there was pain at the seat of the fracture. Two applications of the brush discharge over cast relieved the pain and reduced swelling to marked degree. In treatment of sprains the result from the brush discharge is extremely good. The pain and swelling will be much diminished at the time of administration, and cases of not more than thirty hours' standing will be cured in from five to ten days, during which time the patient should be permitted to use the part with care. In sprains of long standing the length of time required will vary with each case, but improvement in most cases will be marked from the first.

The treatment should be instituted as soon as the swelling appears, and should be continued until the parts are no longer sensitive. The frequency of treatment should be regulated to each individual case.

In the treatment of hemorrhoids, the metal electrode with the wave-current gives speedy and permanent results. I have treated quite a number of so-called "internal and bleeding piles" in this manner and in no case did the patient fail to get the longed-for relief.

REFERENCES.

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Wm. J. Morton, New York City.
Otto Juettner, Cincinnati, O.

DEMENTIA PRECOX.

By J. W. MOBLEY, M.D., Milledgeville.

In presuming to address you upon that phase of psychiatry which is yet in the balance, and under active discussion by the leading alienists of to-day, I hope, first, to command your attention and consideration, and, secondly, to profit by your discussion of the paper which I present. The old and familiar phraseology "precocious child," if followed to its fundamental analysis, conveys to the medical mind, and especially the alienist, a significance of pathological import. Precocious children are considered abnormal in so far as the natural role of a child's life is concerned. Especially is this true where the child is irritable, the imagination brilliant, and the development of the body does not progress pari passu with the intellect. This precociousness or early sign of abnormal mental development not being in accord with the physical forces, these children, in some instances, soon degenerate; their minds come to a standstill, they acquire nothing more, and the hopes of this premature mental activity are lost in the awful picture of a sudden intellectual decay. This, from an etymological standpoint, gives you the simplest and earliest type of that phase of insanity we now wish to study, namely, dementia precox.

HISTORY.

In the days of Esquirol many of this class of dementia and mental incompetency were considered as acquired or

accidental idiots and imbeciles. The assigned causes were generally regarded as providential or fortuitous; being provoked by some form of intemperance, accident or environment, and not looked upon as the early expression of a distinct disease entity. Later on such men as Magnan (1), Morel and Falret, together with the pupils of their school, opposed this theory, and contended that the dementia of early life was an evidence of degeneracy and heredity in origin. It was not until 1863 that any definite effort was made to give this peculiar mental affection any positive classification. Kahlbaum described at that time a positive psychosis, occurring at the age of puberty, which exhibited an early symptomatology towards dementia. To this he gave the name of hebephrenia. His work, however, created very little comment, and it was not until 1871, when Hecker attempted to set forth a true and detailed clinical picture of hebephrenia. His observations led him to pronounce the symptom complex as a distinct alienation, and he proclaimed at that time that hebephrenia "was a mental affection occurring at the age of puberty, manifesting itself by alternate fits of mania and melancholia, and progressing rapidly towards dementia."

ETIOLOGY.

Both Kahlbaum and Hecker regarded the time of the development of hebephrenia, that is, puberty—extending through the adolescent state, as of great differential and diagnostic importance. Indeed, its occurrence at this epoch in life was considered highly peculiar to the affection, and puberty was regarded as its principal causative agent. This marked stress placed upon the time of the onset of the disease as a diagnostic and etiologic factor soon met active opposition from more advanced thinkers. The contention was made that it was possible for many

forms of insanity to occur at the puberal epoch. Only superficial observation sufficed to maintain this contention, and hence, the causative relation between puberty and hebephrenia became a mooted question. Notwithstanding this, the appearance of certain stuporous and confused states at the time of puberty was so constant that Kahlbaum refused to discard the early evolutional stage as an etiological element, and contented himself with recognizing two forms of the disease, namely: "The classic form terminating in dementia, known as hebephrenia vera; and another less severe and curable form to be called heboidophrenia." From our conception of hebephrenia, or the simple form of dementia precox, in its present clinical status, we would not be justified in maintaining the views of Kahlbaum; especially in so far as they relate to the cause and the time of the occurrence of the disease. It must be conceded, however, that the involutional period of life is accompanied by remarkable mental and physical changes. These are especially pronounced in the female. The emotions begin to develop; new sensations are ushered into our natures; the reproductive sense becomes magnified, and with it we pass into a stage of imaginary, sentimental, emotional and physiological activity. This development period in life, gentlemen, is nature's great test of the survival of the fittest; those natures, either through a weakened inheritance or acquired instability, that can not withstand this terrible evolutional storm must fall. Is it so remarkable, then, that with dementia precox there is almost invariably linked an hereditary predisposition? The reasoning is as obvious as the sparkling water that flows from an undefiled fount; it is simply the picture of cause and effect. I maintain therefore, that puberty, per se, does not possess an etiological equivalent in the disease before us, but on the contrary is the prin-

cipal factor in bringing into activity, with its symptom complex, a latent neuropathic element which is either acquired or congenital. In further corroboration of a primary degenerative factor in the development of dementia precox, I wish to cite the marked frequency of tuberculosis in this class of patients as highly significant of this fact. It is not generally conceded that tuberculosis, as a disease, is transmitted from one generation to another, but there is a unanimous acceptance of an inherited predisposing weakness that favors its development. Taking the history of tuberculosis in these cases, dating back from generation to generation, taking the history of insanity, moral depravity, and other manifestations of inherited stigmata, both direct and remote, we can come to a reasonable conclusion that precocious dementia is a primary degenerative psychosis, with its most potent causative factor resting latent in a quiescent inherited instability. We now wish to consider acquired predispositions. Cases are on record in which children born under the most favorable circumstances, with clear family histories and bright minds, may become victims of serious illness and accident; upon these are visited weakened physical states, with cerebral inferiority, terminating sometimes in dementia precox. Furthermore, certain infectious diseases, such as typhoid fever (2), rubeola, and scarlatina occurring during adolescence may be followed by what appears to be a primary dementia. Among the occasional causes might be mentioned mental strain. This is especially frequent in children coming into the active life of cities from the country, where the tax upon the nervous system is more than they can bear. Onanism is also considered to be an occasional cause. This practice is supposed to bring about a kind of neuropsychic exhaustion, but it is too common to merit much consideration as a causative factor.

PATHOGENESIS.

There is very little information to be obtained upon the morbid anatomy of dementia precox, and, especially the organic changes in the brain. The specific pathogenesis as suggested by Dr. J. Christian (2) of the National Asylum, Charenton, to me is only plausible in so far as it recognizes an underlying defective state.

His claims of a constant and identical alteration in the brain cells is intangible unless he accepts as an anatomical basis for such changes a pre-existing neuropathic tendency. We could just as reasonably contend that in the first stages of acute mania or melancholia there is a specific cytolotic change in the brain. I am willing to admit that we do get cellular changes in the brain secondary to any of the psychoses, but the fact has not yet been established that with each and every alienation we get primarily a characteristic change in the brain structure. The investigation that is now being made by Dr. Wm. Rush Dunton, of Shepard and Enoch Pratt Hospital, is highly valuable and quite suggestive, but the pathologic findings noted by him come from those causes that have progressed slowly into dementia, and have died well advanced in years. This links with his observations a secondary consideration which of necessity must undervalue his findings. I have been unable to find any report of a case dying early in the disease that went to autopsy with microscopic findings noted. Dr. Dunton (3) observed certain organic changes in the cells from different regions of the cortex, such as chromatolysis, swelling and displacement of the nuclei with degeneration and atrophy, but as stated above, these were in cases that had been existing for years. His investigation as yet has been quite limited, and these changes are in no sense to be considered conclu-

sive. It is highly probable that these changes in the cortex are not peculiar to dementia precox, but are only such pathological states that might arise in the course of any of the chronic progressive psychoses. The gross pathological findings in Dr. Dunton's cases are very interesting, but in no respect peculiar. As mentioned before, tuberculosis, and especially pulmonary, is quite frequent, and is probably due to the susceptible condition of these patients in their natural weakened state.

CLINICAL COURSE—SYMPTOMATOLOGY.

We now come to look at dementia precox in its hospital aspect. The disease, if considered in a collective sense, possesses a clinical course and chain of symptoms that is quite distinctive and uniform. If we observe the affection in an abstract sense many and varied are the symptoms that come before us. The initial symptoms of the disease, in its several distinctive types, are always confusing and complex. Much embarrassment was produced among the earliest observers, and even among alienists of to-day, by this varied symptomatology. Hence, it is highly probable that so many of the early writers describe this same affection under many different classifications. Dementia primary, adolescent insanity, pubescent insanity, juvenile insanity, katatonia and hebephrenia all representing a nomenclature that may be summed up in one meaning, namely, dementia precox. We are thankful to say that out of this chaos of unscientific terminology is rising a new hope and definite course for the great science of psychiatry. To Emil Kreplein we should bow our heads for his ingenuity in bringing into one category this class of mental alienation. To him should be given the credit for that inspiration that is transforming and revolutionizing psychiatry throughout the world. The time

has come when the study of mental diseases has come to be a science. The honest thinkers in this field of great abstruseness are no longer content to regard every horse-face apprehensive woman as acute or chronic melancholia; they are no longer content to look upon every case of psychomotor excitement, with alternate stupor and delirium extending over a period of from several months to many years, as acute or chronic mania; no longer content to look upon the lucid intervals of maniac-depressive insanity and dementia precox as cures, and diagnose these cases from year to year as they return to the asylums as recurrent mania. Kreplein's classification is still open to criticism, but through it we are offered a satisfactory working basis. His (4) observations led him to conclude that a large majority of mental diseases fall under one of two groups—the maniac-depressive group, ending in a certain per cent. of recoveries; and those cases terminating in some form of dementia, representing one of the types of dementia precox. It is quite probable that a large per cent. of the secondary and terminal dements in our hospitals to-day are but cases of dementia precox in its more advanced stage. In taking up the symptoms of dementia precox it is best to be more general than specific. Hair-splitting diagnoses made upon special symptoms, without considering the history of the disease as a whole, is liable to produce as much confusion as an abstract passage from the Bible. The physical characteristics of the disease present a more striking and interesting picture than does the mental symptoms.

The motor phenomena exhibited through certain grimaces, stereotypy, impulsive movements, eccentricities of manner and verbigerations can not be forgotten. The systematic distortion of the face; the peculiar puckering of the lips—snout-lip—and the pacing of the floor, and

the working of the hands in the same invariable way certainly points to a separate and distinct disease. Notable among the mannerisms are the peculiar physical feats which these patients sometimes perform. Dr. Christian reports a case that always, when he enters the ward, tips up to him, lightly touches his shoulder, and then recedes to his corner again, assuming the same staring stuporous vegetative attitude and apparently oblivious to things about him. I recall among my cases one that looks at the ceiling constantly while making a characteristic gesture; another who has rubbed her nose for years in the same constant routine way. The impulsive acts of the precocious dement embody within themselves an element that is highly differential and peculiar to the disease. It is in this impulsive fit that this class of patients are most dangerous, and frequently commit acts of violence and even homicide, without any after-memory of what they have done. The act seems to be one of imperative motor excitement, as the volition takes very little part in the performance. Cases are on record in which patients under this imperative influence have wandered away and found themselves in new and strange surroundings. They are never able to tell why and how they got there. Admitting the epileptiform and apoplectiform phases of dementia precox, it is quite probable that this sudden unconscious wandering of patients represents a type of psychic epilepsy, which in all probability is nothing more than dementia precox itself.

Dunton says it is easy to differentiate the impulsive acts of the precocious dement from those of paranoia and mania. In the former the sudden violence usually occurs without warning, is motiveless, and comes like a "clap of thunder from a clear sky." The patient is unable to give any reason for his act, and therefore denies it. In mania

or paranoia impulsive acts, with attempts at violence, emanate from a delusion or provocation, and the patient endeavors to explain and justify his motive. One of the most striking physical phenomena is the marked negativism displayed in nearly every case. Negativism has been defined "as the silly, purposeless resistance to every external impulse." It is almost impossible to get the co-operation of these patients in any way. They do not see, as a general thing, the necessity of any procedure you may make in their interest, and hence, offer a certain amount of resistance to every effort to elicit their true condition. Of great interest is the peculiar condition of muscular rigidity which is characteristic of the katatonic type. In this instance negativism seems to be suspended, and the limbs are allowed to remain in whatever position placed for quite a while. The stupor is to be mentioned here as a very impressive phase of the disease. In this state patients may sit or stand for days in certain positions without apparently the slightest interest or knowledge of their surroundings.

Strange to say, however, before the period of dementia sets in, they are perfectly appreciative of the external conditions about them, and hence, their orientation is undisturbed. Attention is very much impaired, as it is almost impossible to educe answers to questions, and when answers are obtained they seem to be more automatic and motor than volitional. Memory for past events is very good, but these patients are unable to elaborate in any way, and their ability for technical work is greatly reduced. The deep reflexes are nearly always exaggerated, being more active in some cases than in others. There is no special change in the pupils, some of my cases have shown a sluggish reaction to both light and accommodation. Sensation appears to be disturbed

to a marked degree in a large per cent. of cases, but whether or not this is a true afferent disturbance is hard to say. Special mention is made by several authors of the irritability of the facial nerve; slight percussion over the facial causing in some cases sharp, quick contractions of the obicularis-palpebrarum. I have elicited this symptom clearly on several occasions. At the time the patient is on the downward scale in nutrition marked desquamation of the epidermis is sometimes observed. Great quantities of ropy mucus is either excreted from the mouth or stomach in certain cases, and the buccal cavity is usually found to be full, with constant driveling. The pulse is generally irregular, rapid and of low tension. The fingernails are often eaten deep into the matrix. The appetite is quite variable, but is generally poor, and often tubal feeding has to be resorted to in the beginning of the attack.

Trommer and Christian make the following summary of symptoms:

The tendon reflexes are increased; the pupils may be equal, dilated or irregular; saliva is increased; constant appearance at puberty or adolescent state; a peculiar confusion in speech, writing and demeanor; the tendency to the production of anomalies in gait, gesture, mien and action; weakness of judgment; various delirious symptoms at the beginning; constant sudden impulses; a rapid termination in a peculiar dementia.

DIAGNOSIS AND PROGNOSIS.

The above symptomatology covers the simple or hebephrenic and katatonic forms. I will merely mention in passing the paranoid type of dementia precox. Here the disease assumes the peculiar characteristics of paranoia, but is different from paranoia in its early tendency towards dementia. Idiocy and imbecility may be confounded with certain stuporous phases of dementia precox, but

in the former there are usually the marks of physical defectiveness and congenital mental deficiency, while if you look well into the history of dementia precox you will see the glimmerings of a once active intellect. A few months' observation will generally enable you to differentiate the stuporous types of melancholia from dementia precox.

The prognosis is bad. Kreplein gives eight per cent. of apparent recoveries in the hebephrenic form. While thirteen per cent. of the katatonic forms he claims recover sufficiently to resume their avocations.

Some authors regard this as entirely too high. Christian states that no case ever makes a complete recovery. The further special differential diagnosis is too voluminous to enter into here. I will only state in conclusion that dementia precox is a chronic progressive psychosis with a peculiar tendency towards dementia, and having its determining features represented in a peculiar chain of symptoms of excitement, delirium, stupor, mannerisms, negativism, verbigerations, stereotopy and cera-flexibilities.

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DISCUSSION ON DR. MOBLEY'S PAPER.

Dr. Martin Cooley, of Savannah: I think the excellent paper of Dr. Mobley should excite interest among us. Its presentation should attract the interest of the profession generally. Psychiatry is a complex subject,

and, unfortunately, up to this time our nomenclature has been confused in our study of cases, and it is only recently that men have gone into psychiatry and have brought to it the same clinical study that has been given to typhoid fever or any other disease, and it is through the excellent work of Kreplin and the Germans that we get a most excellent idea of psychiatry, giving us a rational prognosis.

These cases of dementia precox are most interesting indeed, because we must recognize that they are going to be misinterpreted. There is liable to be confusion. Let us take the simple psychoses or melancholia, which we think would recover, but which does not. These cases occur, in my experience, in young people of a considerable degree of intelligence, the so-called bright people who develop a paranoiac idea. It is usually called paranoia by the general practitioner. They get ideas of persecution and go all to pieces.

A patient was sent to me from Charleston who sustained a slight injury in childhood, without any bone injury. There was simply a scar. There was no epilepsy or any evidence of fracture, but a surgeon nevertheless insisted on trephining the skull. Six months after that it was decided that the trouble was reflex, and the ovaries were removed. I saw the girl two months thereafter, and her condition was one of dementia, and since then has been extreme. She was sent on my advice to a sanitarium, and has recovered. It was negligence on the part of the surgeon. She had a condition which was beyond his care.

I think Dr. Mobley's paper should excite considerable attention, and point out the important fact that the general practitioner should strive to recognize these cases early. Psychiatry to-day is receiving much more attention than it has in the past. A good many men are taking it up.

Our asylum superintendents, who are busy men, have not the time necessary to study this subject thoroughly, and it is well that we have men who are scientifically equipped, and of good general education, who can take up this subject and study it in the manner in which it ought to be studied. Kreplin psychiatry is modern psychiatry.

Dr. E. B. Block, of Atlanta; I wish to express my interest in Dr. Mobley's paper, which was an able one on this subject. I desire to call attention to one feature peculiar to the disease which he did not mention, and that is the peculiarity of the hand-shaking of these patients; the limp, loose, extending of the hand, which is given without any grasp, such as ordinarily takes place in greeting. This is a rather characteristic feature of this disease.

Dr. Mobley (closing the discussion): While I have said nothing particularly new in my paper, I made an attempt to cover the subject as thoroughly as possible in the time allotted me. It is well for the general practitioner to take this class of patients, especially young children, and place them under the most favorable circumstances. A child with inherited stigmata or mental weakness should not be subjected to anything that will irritate, or at least be trying to him.

That is the only respect in which I thought this paper would excite the interest of the general practitioner, throwing a safegurd around this class of children, when this disease, at or before puberty, is so likely to develop. Of course, it may develop later, even at the age of twenty-five years, but that is still a mooted question.

ANTERIOR POLIOMYELITIS.

By J. CHESTON KING, M.D., Atlanta.

Acute diseases of the anterior gray cornua are known as acute anterior poliomyelitis or anterior cornual myelitis, or acute atrophic paralysis, or sometimes simply as infantile paralysis. It differs from chronic myelitis or transverse myelitis in that it is selective, limiting itself to the anterior horns of the grey matter.

From one of its names, it might seem that it occurs only in childhood, but it occasionally occurs between ten and twenty years of age, or over that. It is most frequent in children of three years and under, and affects either sex about equally. The time of the year is a most significant factor for the occurrence of this class of cases. They are found to be most numerous in the hot months—June to September.

This might be explained as due to violent heat, followed by sudden chill, as getting wet and exposure to cold produce the disease. But its causes are practically unknown.

SYMPTOMS.

Generally the child is taken suddenly ill, with more or less fever, vomiting and perhaps convulsions. It is put to bed, passes a restless night and perhaps no diagnosis can be made at first. The following morning, perhaps, one, two, or even all four, limbs may be completely paralyzed.

Sometimes the trunk muscles are involved. The tem-

perature is not very high, but remains stationary for four or five days.

In many cases the onset is very sudden, the paralysis coming on in a few minutes (which is suggestive, that these cases are likely due to hemorrhage or thrombosis of the cord).

Sometimes the paralysis takes one or two days to develop. Sensation is not affected and the power over the bladder and the rectum is not impaired as a rule. There are exceptions to this.

The maximum paralysis is reached either at once or within a very short time. Then it remains stationary for a few days, after which certain muscles will improve in power.

Motor power gradually returns in one part after another, until paralysis is narrowed down, it may be, to one or more limbs, or even to a part of one limb.

One leg, one arm, both legs, arm and leg of the same side may be affected. Within the limbs, certain groups of muscles may be picked out in a manner that is suggestive of spinal cord disease; for instance, in the upper limb the muscles of the hand and forearm, or the deltoid spinati and flexors of the elbow; in the lower limb, the anterior tibial group, or the calf muscles, or the thigh muscles. Within a fortnight, or earlier, the electro-contractility begins to alter and the muscles waste. This wasting marks out the localized character of the disease and these wasted muscles become flaccid at the end of two or three weeks, and if tested electrically they give the reactions of degenerations, viz.: they do not react to a faradic current, or only to a very strong one, and they show increased irritability to the constant current, and especially to the positive pole.

In most cases, but not all, these muscles, which lose

their faradic contractility and rapidly waste lose also, in the course of six months, their excitability to the constant current, and are permanently paralyzed; while in the muscles which ultimately recover the reaction to the two currents is diminished, but not completely lost for both. The distribution of the paralysis is more often seen in the legs than the arms, and it is not, as a rule, symmetrical. The whole limb may be paralyzed, but more commonly certain muscles, which will be seen to correspond to the groups of muscles assigned to the different segments of the brachial and lumbar enlargements of the cord. Even in mild cases, it is probable that some permanent disability will be left. In severer cases, as time goes on, not only do the muscles waste, but the bones of the affected limb are checked in their development, so that it becomes shorter than the opposite. Vasomotor paralysis is seen, the skin becomes cold, purplish and subject to chilblains. Deformities of the foot arise, mainly from the unbalanced action of non-paralyzed muscles; this disease is a fruitful source of club-foot. Where the extensors and flexors of a limb are paralyzed, it is quite flaccid, like a snail.

PATHOLOGY.

In cases described by Ferrier-Drummond and Oppenheim, the spinal cord shortly after death was red and softened, and from microscopical examination showed extreme vascularity, especially in the anterior horns, and also in the white columns and the middle and the anterior parts of the posterior horns, the arteries being intensely conjested with minute hemorrhages.

The neuroglia was swollen and in the anterior cornua the changes were most marked, the cells being granular and ill-defined, and processes often absent.

In cases of longer duration softening of the cord has

been found. In the muscles, the muscular fibres in part completely disappear and are replaced by fibrous tissue.

The primary lesion is vascular, in most cases inflammatory, and in some hemorrhagic, but in the absence of an injury, the cause of the lesion is not known.

The destruction of a cell in the anterior horn is followed by atrophy of the muscle fibril, which it supplies; and as the cell is not regenerated, the fibril remains permanently paralyzed and atrophied.

PROGNOSIS.

It is not fatal, except where the muscles of respiration are involved.

At the expiration of two weeks the muscles that react to faradism will recover, and those that do not react will either be permanently paralyzed or partially so; in the latter case, as long as the retention of reaction to the constant current remains there is some hope that the faradic reaction may return, and with it the power of the muscle.

TREATMENT.

At the onset of the attack the patient should be kept absolutely quiet in bed and lie on the face or on one side, and hot applications made to the spine.

We can not repair the destruction of cells, but we can facilitate recovery by maintaining the nutrition of the paralyzed parts. When the attack is due to cold the limb should be kept warm from the first; diaphoretics, as liquor ammoniae acetatis and citrate of potash, should be given; ergot and belladona are also recommended.

After the disease has assumed a stationary condition, cod-liver oil and tonics are used. Local treatment should not be used until at least a month has elapsed. The limb should then be bathed in hot salt and water and rubbed

with a rough towel, and especial care should be taken to keep the limb warm with thick stockings; the muscles should also be systematically rubbed every night and morning.

The constant current should be used; both because it dilates the blood vessels of the part, and because the muscles will contract under it, and not under faradism.

The positive pole should be applied to the spine with a large, thick pad, well wet with salt and hot water, and the affected muscles should be brushed up and down with the negative pole, applied with an electrode two inches in diameter; the electrode should be taken off and reapplied at the end of each stroke, so as to make and break the current, the strength of which should be only just sufficient to produce a slight contraction in the muscle. The application should be made for fifteen minutes each day.

With children it is best to begin without any current at all and proceed, in the course of a week increasing every day by one or two cells till the proper strength is reached, or as much as the child can bear. In some children the application produces so much fright and general disturbance that it is best to discontinue it. Though electricity has probably no effect on restoring the functions of damaged cells in the anterior horns of the spinal cord, it is beneficial in keeping up the excitability of the muscles, so that should the cells recover, the muscles will be in the best condition to respond to impulses emanating from these cells.

As long as the muscles respond to the constant current, treatment may be continued; when this fails, it is useless.

DISCUSSION ON DR. KING'S PAPER.

Dr. J. W. Daniel, of Savannah: I would like to ask Dr. King a question. In his treatment of this disease he

mentioned that the electric current should be used. He stated that the object of the electric current is to dilate the blood vessels. He furthermore stated that the positive pole should be applied to the spine. Now, if the positive pole be applied to the spine, it will not dilate the blood vessels, but, on the contrary, it will contract them. The negative is the dilating pole.

Dr. King (in closing): In reply to the remarks of Dr. Daniel, I will say that the current which should be used in the treatment of this disease is the constant current. The faradic current is rarely used, only as a test measure, but not as a curative measure. I use the constant current and break it.

A CASE OF PARAMYOCLONUS MULTIPLEX.

By E. BATES BLOCK, M.D., Atlanta.

The patient, a married woman, age eighteen years, came to me on the 12th of February, 1906, complaining of a sucking, jerking motion of the tongue.

Family history: The father disappeared suddenly eight years ago, and has not been heard of since. Mother is living and well. One brother died of typhoid fever. One sister, living and well. She has been married for two years, and has one child living and well.

Past history: Had measles in March, and her child was born last August. (The child has never had measles.) Whooping cough, chicken-pox. "Stomach dropsy" when a child, up to nine years ago, in which the stomach, legs, forearms and hands were much swollen. There has been no swelling since that time.

Present illness: Began on the 4th of April, 1905, three weeks after the measles. The tongue is stuck between the teeth and withdrawn quickly, making a sucking sound, from forty-two to forty-four times in ten seconds; that is, two hundred and fifty-two to two hundred and sixty-four times a minute. This is much worse when she is excited or nervous. She can stop long enough to talk usually, but for three weeks in June she was rarely able to stop long enough to say a word. It keeps her awake at night, often as much as four hours, but stops during sleep, and she usually sleeps well. Ordinarily, it does not

interfere with eating, but in her worse attacks she was only able to take a little milk. She has only momentary control over the attacks when they are bad. She was free from it for three weeks after her baby was born and it is often absent for a few days or several weeks at a time, but is present more than half the time. Sometimes the head jerks, or one or the other arm, or both, or one or the other leg, or both, may alternately jerk, usually associated with tongue movements, but sometimes without it. For the first three weeks of this trouble only the hands and the feet were affected, and the trouble started in the right hand. Sometimes only the jaws work together, like the teeth are chattering, and this interferes with her chewing her food. The motion of the hands is like wringing the hands. They are not moved at the same time, but she wrings one and then wrings the other in an exactly similar fashion, and then may jerk one leg and then the other. She has frontal and nucheal aches frequently, worse when she is nervous. She says that her eyelids jerk at times, but I have never seen this. Her eyes are easily tired, and she can not read or sew long. Ears and nose good. She had some swelling on the right side of her larynx at her menstrual periods before she was married, from May, 1904, until about March, 1905, as big as a hen's egg and lasted each month about six days, accompanied by a prominence of her eyeballs, but there was no history of tachycardia. She is now nursing her baby and is not menstruating, but she was irregular after her marriage and had much pain, lasting about five days.

She has had frequent crying spells all her life, but worse since her father left suddenly eight years ago and this trouble began. She has a large ringworm on the right side of her neck.

Her spasmodic movements stop when her attention is distracted by asking a question and preparatory to answering it, and jerking can sometimes be brought on in her hands and legs by suggestion. Her patella reflexes are exaggerated. When the tongue is in action tapping the muscles or tendons produces spasm of the legs always, and the spasm may sometimes also be produced in the legs when the tendon is struck, even when the tongue is not jerking. Her thyroid glands is not enlarged. She says that she knows when her attacks are coming on by having numbness in her hands and feet when she gets up in the morning. The trouble is least pronounced while standing up, worse sitting down and still worse lying. She has no pains anywhere. The patient is a poor woman, of less than ordinary intelligence.

The case is interesting not only on account of the rarity of the affection, but the rapidity of the muscular contraction far exceeds any other case that I have ever heard of. The greatest number of muscular contractions in any case reported heretofore to my knowledge has been 180. While many writers prefer to class this disease with hysteria, it seems very doubtful if this is the proper view to take of it, in that not only individual muscles may be seized with these shock-like contractions, but even portions of muscles may be so affected, and the violent muscular contractions may take place even without locomotor effect. Then, too, the other stigmata of hysteria may be absent. The disease is very commonly associated with epilepsy.

The disease is curiously different from chorea. In the latter disease on asking the patient a question the movements become more pronounced, whereas in the former they usually subside until after the question is answered. Also in chorea the face is more commonly affected than the

extremities, while in myoclonia the limbs are more commonly affected than the face. While chorea is commonly unilateral, myoclonia is usually bilateral, voluntary movements are apt to evoke chorea, but retard the movements in myoclonia. Then, too, there is a marked difference in the apparently purposive irregular arythmic group-like contractions of the muscles in chorea, and the shock-like contractions in myoclonia.

The patient has improved very much under the use of thyroid tablets, so that pressure on the muscles or nerves and tapping the tendons does not now produce the muscular phenomena after three weeks treatment.

RECENT STUDIES IN RABIES.

By JAS. N. BRAWNER, M.D., Atlanta.

Since Pasteur's memorable work on rabies, demonstrating the constant occurrence of the virus in the nervous system and the means of attenuating it so that preventive inoculations might be made, numerous investigators have studied this disease in every detail. Especial attention has been paid to the pathology and every portion of the nervous system has been minutely scrutinized by the best histologists in search of specific lesions. Other workers have been especially active in trying to improve on the preventive inoculations of Pasteur or to get an effective serum. One or two have been equally active in trying to disprove the existence of such a disease communicable to man, and have written many articles setting forth their claims. Those who deny the existence of rabies are fast disappearing, and it is now rare to see a physician skeptical on the subject.

While an immense amount of work has been done to improve on the preventive treatment now used at all the Pasteur institutes, but little has been accomplished. Various means have been used to attenuate the virus and many attempts have been made to obtain a serum that would be effective after symptoms develop, but practically no improvements have been made on the method of treatment first demonstrated by Pasteur, excepting, perhaps, that much larger doses than formerly are now used.

The pathology of rabies is interesting from many standpoints, and important results have been obtained from recent investigations along this line. One of the most practical questions has been, can a specific lesion or micro-organism be found so that a rapid and positive diagnosis may be made from a microscopical examination of the tissues. The lack of a means for rapid diagnosis in cases of suspected rabies in animals has been long felt, as patients are often put to unnecessary worry and delay awaiting the result of the inoculation of rabbits.

It is not necessary to describe the "rabic tubercle" of Babes, or the epitheloid infiltrations about the neurons, first mentioned by Van Gehutchten and Nelis; but we will consider more in detail those structures more recently described, now commonly known as "Negri bodies."

In March, 1903, Dr. A. Negri, of the University of Pavia, announced the discovery of certain bodies in the central nervous system of animals dead of rabies which he believed to be the specific germ of this disease. This announcement, coming from Dr. Golgi's assistant, and one perfectly familiar with the microscopical appearance of both normal and pathologic nerve tissue, at once attracted attention. Since that time numerous investigators, especially the Italians, have confirmed his results.

In August, 1903, Dr. Negri made a further report, stating to that time he had examined the nervous systems of over one hundred animals suffering from rabies and various other diseases, and found the bodies only in the animals proven to be rabid by the inoculation test. In two instances where rabies existed the structures could not be demonstrated.

Later, Bertarelli and Volpino found the bodies described by Negri in the brain of a boy who died of hydrophobia. Bertarelli, summarizing the work done in

Italy by Negri, Volpino, Abba, Bermans and himself, states that in more than a thousand tests the bodies were found in all cases of rabies except three, and were never found in animals free from the disease, as determined by the inoculation of rabbits.

Poor, in New York, after twenty-three examinations, confirmed the results of the Italians.

The structures described by Negri are usually found in the cytoplasm of nerve cells or the proximal ends of their processes, but not in the nucleus, though they may be in contact with it. He believes them to be protozoa. They occur most frequently as inclusions of the large pyramidal cells of the hippocampus major, Purkinje cells of the cerebellum, the large cells of the spinal ganglia, spinal cord, pons and occasionally the pyramidal cells of the cerebral cortex. As a rule they are much more numerous in the hippocampus major than in other portions of the nervous system, though this is not always the case, as they may be absent here and numerous in the spinal cord or cerebellum. Negri states that when rabies is produced by inoculation into the sciatic nerve the bodies are found chiefly in the spinal cord and ganglia, rarely in the brain. When the inoculation is on the face, they are more abundant in the gasserian ganglia, hippocampus major and cerebellum. There seems to be a difference of symptoms corresponding to the distribution of the bodies. Ordinarily when the disease is acquired in the natural manner they are larger and more numerous in the hippocampus major. This is probably due to the fact that most bites communicating the disease are inflicted on the head or face.

As usually found, Negri bodies are from four to six microns in diameter. Occasionally, especially early in the disease, they are very small, barely visible with a

1-12 oil immersion. At other times they are large, measuring twenty-five microns in length. The larger forms are more frequently found in laboratory rabies and in the natural form closest to the site of inoculation.

They are round or oval in shape, occasionally irregular or elongated. When seen in fresh, unstained tissue, teased in a dilute acetic acid solution, they seem to consist of a nongranulated substance of hyaline appearance. In the center of the larger forms bright spots may be seen, surrounded by a band of homogeneous protoplasm. In specimens stained with eosin and methylene blue, they appear as dark red structures imbedded in the blue protoplasm of the nerve cells. They show up black in specimens stained with osmic acid.

To demonstrate these bodies, fix a small piece of each the hippocampus major and cerebellum in a saturated solution of corrosive sublimate, or of Zenker's fluid, dehydrate in absolute alcohol for six or eight hours, and section in paraffin. The sections should be thin and uniform. Fix upon a slide with Mayer's albumen, treat with a one-half per cent. aqueous solution of eosin for five minutes, wash in water and counter stain with a one-half per cent. aqueous solution of methylene blue for five minutes. Rinse in water, dehydrate absolute alcohol, clear in xylol and mount in balsam. In specimens thus prepared, the Negri bodies stand out very distinctly as dark red structures, imbedded in the blue cytoplasm of nerve cells. As a rule, but one body is found in a cell, though occasionally two, three or even four may be found. The smaller bodies appear homogeneous in structure, but the larger ones contain a blue central mass resembling a nucleus. (Demonstration.)

While most observers believe these bodies to be the causative factor in rabies, all admit that posi-

tive proof is lacking. The definite morphology of the structures and the constancy of their occurrence, tend to substantiate such a belief. Three hypotheses may be offered to explain their occurrence: (1) Degenerations, or artefacts of the cell protoplasm; (2) phagocytosis, that is, the nerve cells attracting and enveloping certain other normal histological structures, as red blood corpuscles; (3) the specific micro-organism of the disease.

As to the first hypothesis, Negri states that artefacts can not be made by any method of preparation to simulate these bodies, and his conclusions are corroborated by all observers so far as I am able to determine. The question of degenerations should be carefully considered. While it is the general opinion that no form of metamorphosis of the cell protoplasm could account for structures so constantly found in certain cells, so definite in shape and uniform in staining reaction, yet the possibility of the toxin causing a specific form of degeneration should be kept in mind.

Poor states that in a case of tetanus minute eosinophilic granules were found in the Perkinje cells of the cerebellum, but to an experienced eye they would not be mistaken for Negri bodies. Nerve cells in all stages of degeneration show no such structures as are found in rabies. Negri bodies retain their characteristics in cells in all stages of degeneration, and Negri states that they even resist the putrefactive process.

The theory of phagocytosis is less tenable than that of specific degeneration. To the inexperienced erythrocytes are more likely to be mistaken for Negri bodies than any other histological structures, as they are about the same size, though usually larger, and are eosinophilic in reaction. This fact suggested the hypothesis that Negri bodies were red blood corpuscles phagocytized by nerve cells.

To me this view is untenable for many reasons. While both Negri bodies and erythrocytes stain red, the former are of a darker color. In fresh preparations the bodies are hyaline and have not the slightest resemblance to red blood cells, and in sections stained with osmic acid they show up black, while the latter remain unstained. It is also impossible to conceive of a phagocytized red blood corpuscle increasing in size and developing a nucleus. Phagocytized red blood corpuscles in the spleen show no resemblance to Negri bodies, but are found as fragments and in various stages of degeneration.

Both direct and indirect evidence in favor of these structures being the specific germs of the disease may be said to exist. As stated by Bertarelli: "In more than a thousand tests the Negri bodies were never found in animals free from rabies as determined by inoculation of rabbits. On the other hand, they were always found in infected animals with three exceptions, and in these only a part of the nervous system had been examined." It may be said that in all cases of rabies if every part of the nervous system were examined, these bodies would invariably be found. All observers agree that Negri bodies are never found in other diseases, even in those where the degenerative changes in the nerve cells are pronounced. Judging from analogy, we must admit that rabies is caused by a specific micro-organism, and from its behavior to heat, chemicals and culture media, we are probably justified in believing it to be a protozoan.

The virus is destroyed in a few minutes at a temperature of 110 degrees F. Two per cent. carbolic acid renders it inert in a few seconds, and it is rapidly destroyed by any of the weaker antiseptics. It retains its virulence for weeks or months in neutral glycerine. Glycerine that

is slightly acid destroys the virus. It can not be grown on any known culture medium.

Like many protozoan diseases, it is communicated through the saliva. We now know that malaria, mountain fever, cattle fever and probably yellow fever, are protozoan diseases, and are all communicated through the saliva of infected mosquitoes, ticks, etc. While it is true that the virus of rabies does not pass through an intermediate host, but directly from animal to animal, yet the fact that it is eliminated by way of the salivary glands is suggestive of the protozoan nature of the organism. So, from indirect evidence in our possession, the specific germ of rabies is probably a protozoan, and as Negri bodies resemble protozoa, we are justified in assuming them to be the causative factor in this disease.

Whether or not we regard the bodies discovered by Negri as the specific cause of rabies, their value as a means of rapid diagnosis is now generally recognized. When the brain of an animal is examined and Negri bodies are found, the evidence is considered positive and a diagnosis of rabies is made. More than one thousand tests, confirmed by the inoculation of rabbits, have now been reported, and not a single exception has been found. At the Georgia Pasteur Institute, within the last eighteen months, I have demonstrated Negri bodies in forty-two dogs and three cats, and in every instance the rabbits inoculated died of typical rabies. In three cases where the inoculation test resulted positively, no bodies were found, though only the hippocampus major was examined, and the animals were killed in the first stages of the disease. In fifteen dogs and two cats, proven not to be rabid, no such structures could be demonstrated.

In conclusion, it may be stated that we now have a reliable method by which the diagnosis of rabies in ani-

mals can be made in a few hours. It has many advantages over the old method, the inoculation of rabbits. Much time is saved and the patient relieved of much suspense. At present I always inoculate one or two rabbits to corroborate Negri's test, and if the bodies can not be found rabbits should invariably be inoculated to prove conclusively the absence of rabies. Dr. Negri has given us a most valuable diagnostic method, and it is the consensus of opinion that he has also discovered the specific micro-organism of rabies.

DISCUSSION ON DR. BRAWNER'S PAPER.

Dr. Henry R. Slack, of LaGrange: At the last meeting of the Medical Association of Georgia, held in this city, I read a paper on hydrophobia, its prevention and treatment, and at that time the distinguished dean of the Medical Department of the University of Georgia (Dr. Foster) took issue with me. I refer to this now, as he is not present to-day, having answered the long roll-call. He did not believe in rabies. The paper I presented was based on the work of Nelis and Ravanel, showing that in this disease there was a hyaline degeneration of the nerve cells. This has since been proven to occur in other diseases than rabies, and is not considered so valuable as a test, although they have found it in nearly every instance of rabies. But the work of Negri seems to be a classic. There are some few exceptions to it. We have proved it in our institution in Atlanta. There were only two cases in which there was failure to find Negri bodies after the inoculation of rabbits which showed rabies. This places hydrophobia where it should belong, and where all physicians accept it, as a disease which is transmissible to man.

At the time Dr. Foster took issue with me he had the

support of two distinguished medical writers, Loomis and Douglas. Dr. Loomis, as many of you doubtless know, has been converted to the hydrophobia theory by a sad personal loss. His son was passing along Fifth avenue, New York, one afternoon and was bitten by a dog. There was a crowd of people who saw the boy bitten. The wound was not cauterized. Dr. Loomis refused to have the boy treated. He wiped the wound, and in less than six weeks the boy died from hydrophobia. Since then Dr. Loomis has written articles to counteract the bad impression he had previously created by saying that there was no such a disease, and in fact he regretted very much the position he had taken in the matter.

This paper of Dr. Brawner's is very important, as it will save many a person who is bitten by a dog supposed to be rabid. It takes from fourteen to eighteen days to carry on the treatment after a patient has been bitten. Now, with our present improved methods, in twenty-four hours a stain can be made and we can determine whether the case is one of rabies or not, and for that reason this paper is very important.

Dr. Claude A. Smith, of Atlanta: I am very much interested in this paper from the fact that I have been conducting a series of experiments with reference to this disease. Whether this is the only causal agent of rabies or not, is not fully determined. Like the spirocheta of syphilis, it is not present in all cases or in all reports. We have not been able to cultivate it in any culture media, and the fact that the organism, as reported by some investigators, will pass through a porcelain filter would indicate that it is not the organism itself, but probably some product of the organism. But the fact that it is constant indicates it is of value in making an early diagnosis, which has been so difficult in the past. As to

whether this is the organism, we can only determine that by future investigations. It makes us a little skeptical when good men have reported finding organisms which they believe to be the specific organism of the disease. We are always skeptical when a new organism is brought to our attention. This is of more value than the changes which have been reported by other observers, from the fact that, for instance, in the changes we find reported by Van Gehutchten in the perivascular infiltration, which he considered diagnostic of the disease, but which has been found by others not to be present. Then Nelis and others reported a multiplication of the epithelial cells lining the capsule of the ganglionic cells, reporting them as constant in the disease. This was found in other diseases, and was, therefore, not constant. Ravanel and others maintain that it is fairly diagnostic; from the symptoms and changes together a diagnosis can be made. The fact, however, that this body is always constant, whatever it is, in the disease, indicates that it is really of positive diagnostic value, and is, therefore, superior as a causative factor to any of the others that have been recorded in the past.

Dr. Brawner (in closing): It is unnecessary for me to say anything further. In reference to Dr. Smith's remarks as to the organism passing through a porcelain filter, I will say that it has been proven positively that the organism of rabies will pass through a Berkfield filter, and that this organism passes through two cycles of development, which a great many of the protozoan organisms do, and the Negri body has never been found in the saliva. It is eliminated in the saliva probably, and is of different form, and when it gets in the tissues it undergoes another cycle of development.

THE SPECIFIC ORGANISM OF SYPHILIS AND A SIMPLE STAINING METHOD FOR THEIR DETECTION.

By C. R. ANDREWS, M.D., Atlanta.

For a number of years there has been ascribed to various micro-organisms the specific etiologic role in the production of syphilis, but until quite recently the finding of no organisms has been confirmed a sufficient number of times to justify its acceptance as the specific cause. Experimental inoculations have been made on a number of different animals by a large number of workers, the results of whom, however, have been conflicting and not corroborated by other investigations.

In 1903 Metchnikoff & Roux successfully inoculated a chimpanzee with syphilitic virus from a human being and this was followed by the successful repetition of this experiment on a large number of monkeys. In regard to the susceptibility of the different species of monkeys, Neisser concludes from his experiments on inoculation as follows: "The lower monkeys react with local syphilides, the highest monkeys, namely the chimpanzee, gorilla and orang-outang, react with primary lesions, while the gibbon, which occupies an intermediate position, develops less characteristic primary lesions and fails to show the typical secondary ones."

Klingmuller and Baermann diluted syphilitic virus with normal salt solution and filtered it by means of the Berk-

feld filter. With the filtrate they inoculated themselves, the results being that no lesion of any kind was produced.

Prior to the announcement of the discovery of the parasites which occurred in the lesions of syphilis, Metchnikoff & Roux passed the syphilitic virus through a Berkfeld filter, and with the filtrate inoculated a chimpanzee with a negative result, while inoculating with the unfiltered virus produced a chancre, thus showing whatever the contagion might be it did not pass through the Berkfeld filter, and consequently must be microscopic in size. In addition they have shown that if heated to a temperature of 51 degrees C. the syphilitic virus loses its virulency.

In April, 1905, Schaudinn & Hoffman announced what in all probability appears to be the specific organism of syphilis. This they describe as a thin filamentous spiral which could only be seen in a living state by the high powers of the best apochromatic lenses. This organism Schaudinn classified as a spirochetæ, a species which according to Schaudinn belongs to the class of protozoa. These organisms he demonstrated in the superficial secretions of the syphilitic lesions and in the depths of the diseased tissues, and in the superficial enlarged inguinal glands. A few weeks later Schaudinn & Hoffman described another species of spirochetæ, namely, the spirocheta referingens. This organism is larger than the spirochetæ pallida, is more wavy than corkscrew-like, more refractile and stain with great facility; the spirals are also larger. It was found by him with the pallida in three out of four cases of syphilis.

To discover these exceedingly delicate spirochetæ it is best to use cover-glass preparations made directly from the fresh material taken from the lesions. In the primary lesions, which have been excised, the papules, or condy-

lomata, press out as much fluid as is possible from their centers spread on cover-glass, dry and examine. In glands which have been extirpated entirely, simply make a section and press out some of the glandular fluid from the center. If no excision, however, is made and the examination is to be made directly from the chancre or secondary syphilide, curette its surface lightly, and if it is possible squeeze out some of the serum and smear thinly on cover-glass. From a number of measurements I obtained the following results: the length of these organisms vary from 4 to 14 m. averaging about 7 and being somewhat smaller than the other varieties of spirochetæ (Sp. Obermeiri, anseina, ziemanni, buccalis). The width varies from an immeasurable thinness up to about ½ m. The number of spirals vary from three to twelve and the distance between them was from ¾ to 2 m. The movements of these organisms are very characteristic and quite different from those of other spirochetæ. There is first rotation on a long axis, moving forward and backward and undulations of the entire body. There is occasionally suggestions of an undulating membrane but no flagella have ever been demonstrated. The poles are sharply pointed. Practically nothing is known of the finer structure of these organisms, particularly of the nuclei on account of the great difficulty which presents itself in studying such minute structures. These spirochetæ continue to live if the tissue fluid be diluted with normal salt solution and are sometimes motile for six hours after such dilution is made. They behave differently, however, toward concentrated glycerine solution, becoming immotile in five to ten minutes. They then assume many different shapes and often becoming stiff; in one to two hours they lose their spiral shape and may again take back their spiral shape even while under ob-

servation, and finally often disappear. Others may gradually draw up into a sort of spiral spindle-shaped structure similar to the malarial sporozoites: this shortening may finally result in short oval figures which may persist for twenty-four hours in a glycerine solution. Similar structures together with typical spirochetæ are sometimes found in stained preparations. All attempts to artificially cultivate these organisms have proved failures.

When this discovery was announced, Schaudin & Hoffman very modestly did not claim to have discovered unquestionably the specific agent of syphilis, but such great interest has been manifested by this discovery which has led to so much work and so many contributions to the subject that the force of so many and so constant findings of this organism in syphilitic disease seems almost to have precluded the possibility of doubt. This work has been greatly added to by the brilliant work of Metchnikoff & Roux. These investigators inoculated twenty-two chimpanzees with the virus from human syphilides and in no case failed to produce the disease. Eight of this number presented secondary lesions, three others presented mucous patches. Small, dry or necrotic papules on seven other chimpanzees, and others showed irregular lesions over the body. The periods of inoculation in these experiments varied from nineteen to sixty-one days. Found sp. p. in seventy-four per cent. of these cases. Buschke & Fischer found spirochetæ in the liver and spleen of a child with congenital syphilis. Levaditi found them in the fluid from a bullæ in a child eight days old. These did not come from secondary infection, as the blisters were not ruptured and the spirochetæ were also found in primary papules.

Levaditi has also succeeded in finding them in the lungs, spleen and liver of congenitally syphilitic children.

They have also been found in circulating blood of syphilitics by a number of observers. These organisms when taken from the base of the papules have been observed to be agglutinated, some of the organisms being sometimes seen as stiff spindles, or thread-like bodies shaped like an S.

Until quite recently the staining of these organisms has been thought to be quite difficult to accomplish, but as has been lately shown by Bandi & Samonelli, it is quite easy to attain.

The principal methods of staining these heretofore have been as follows:

1. By solution of azure blue.
2. By solution of marine blue.
3. By Reitmann's process.
4. The method of Geimsa.
5. By the solution of van Ermengem.

While working with these organisms in the laboratory of the State Board of Health, I have succeeded in staining them by a comparatively simple method. The Romanowsky stain as modified by Dr. H. F. Harris is the one used. This method is as follows: The slide containing the smear is placed for a second in 10 per cent solution of formalin in 95 per cent. alcohol; it is taken out immediately and washed well with distilled water; it is then placed for 30 seconds in 1-1000 aqueous solution of eosin; this is again washed with water and placed for 2 or 3 minutes in the following solution:

Unnas methylene blue	**5 parts.**
1% methylene blue	**5 parts.**
Distilled water	**90 parts.**

The above stains should be from Gruebler & Co., and the methylene blue medicinally pure.

The slide is then removed, washed in water, dried in

the air and mounted in cedar wood oil or acid free balsam. This method is quite simple, requiring about four minutes for the entire staining process. By this method spirochetae are stained a pale rose or bluish color. The organisms are perfectly defined by this method, and I have never failed to find them with this stain when they could be demonstrated by the method of Giemsa.

Another method which is highly recommended by Bandi & Simonelli is as follows: To one litre of diluted water is added one grm of eosin (Gruebler & Co.) and to another litre one grm of methylene blue (Meister Lucius & Bruning); these were mixed and allowed to stand two, five or seven days. The mixture is then filtered and the precipitate is washed with water until no color comes away; it is then dried in the air and of it is made a saturated solution in pure methylic alcohol.

In using this stain cover-glasses are dried in the air as usual, and a few drops of this stain are put on and allowed to remain from four to ten seconds; it is then washed very rapidly with distilled water. The stain should not be left on for more than five to ten seconds. The spirochetae are stained very clearly by this method. If a stronger contrast is desired this stain is allowed to remain for a few seconds longer, when it is washed quickly and rapidly with water until only a diffuse rose color remains.

For demonstrating these organisms in the tissues the following method, recommended by Levaditi, gives most excellent results:

1st. The portion of the tissue to be examined is cut into pieces one millemeter thick and fixed for twenty-four hours in 10 per cent solution of formalin in water.

2d. Wash and dehydrate in 96 per cent. of alcohol for twenty-four hours.

3d. Wash with distilled water for several minutes. Infiltrate with an aqueous solution of nitrate of silver one and a half to three per cent., the solution of preference being three per cent. This infiltration should be accomplished at thirty-eight degrees C. and continue from three to five days.

4th. Wash quickly with distilled water and allow to remain at the ordinary temperature of the room for twenty-four to forty-eight hours in the following solution:

Acidi Pyrogallici	2 to 4%.
Formalin	5 c. c.
Distilled water	100 c. c.

5th. Wash with distilled water, dehydrate with alcohol; xylol, paraffin and section (5m. should be the maximum).

6th. These sections are then stained by one of the following methods:

(a) Stain for a few minutes with Giemsa solution, wash with water and differentiate with absolute alcohol to which has been added a few drops of the essence of Girofle clear in xylol or bergamot, mount in Canada balsam.

(b) Stain for a few minutes with a concentrated solution of tolouidin blue in water, differentiate with alcohol, to which has been added a few drops of Unnas glycerine —ether mixture, clear in xylol or bergamot, and mount in Canada balsam (the procedure recommended by M. Manouechian).

While, as above stated, it can not be proved conclusively that this is the specific organism in the production of syphilitic disease, since all attempts at artificial cultivation has failed, and consequently it can not fulfil the law of Koch, still, as in the case of the ameba coli, its constant finding will simply by force of numbers establish its etiologic rule.

Metchnikoff believes that this is a specific organism for the following reasons: First, the constant finding of the parasite in the primary and secondary lesions; second, the confirmation of these findings in the most widespread countries of the world; third, the presence of great numbers in hereditary syphilis; fourth, the presence of spirochetae in the circulating blood of syphilitics.

It is a well-known fact that syphilis is not contagious in the tertiary stage, and there is no authentic report of these organisms having been found in tertiary syphilis. This of itself lends great weight to the organism as being specific.

It is at present difficult to say just what this discovery will mean to medicine, but it is certainly not too sanguine to hope that it will contribute an infinite amount of good in perfecting the prophylaxis of this disease.

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DISCUSSION ON DR. ANDREWS' PAPER.

Dr. H. F. Harris, of Atlanta: Dr. Andrews has correctly stated the facts when he said that no one can speak positively at the present time as to the real significance of these organisms in the causation of syphilis, but so many observers have succeeded in demonstrating them that it is highly probable, if not absolutely certain, that they are in reality the cause.

I rise mainly for the purpose of stating to the Association that examinations for these organisms will be made in the State Laboratory, and any member who wishes to send preparations to us will have them examined and reports made to him at once.

Dr. F. G. Hodgson, of Atlanta: I enjoyed Dr. Andrews' paper very much, and desire to call attention to an error which is made by men who are not careful in examining a tonsillar ulcer for the diphtheria bacillus. I find a number of spirochetae can be demonstrated from spirocheta pallida. They are called spirochetae tendi. They are much larger than spirocheta pallida, and have more wavy outlines than the latter.

Dr. W. S. Goldsmith, of Atlanta: I think the last two

papers, one on rabies and the other on the differentiation of syphilis, are important contributions. The discovery of the Negri bodies in rabies as a positive diagnostic sign is a strong point in this horrible disease. Instead of waiting now eighteen days, possibly three weeks, to make a diagnosis, the diagnosis can almost be made at once, and it is easy for us to see what an immense saving of time there is, and what great comfort there is in making such a diagnosis. I can only speak of the spirocheta in a clinical way. Dr. Andrews has done some of this work for me, and I have two or three cases under observation. One of them I am treating in a routine manner for syphilis. That patient is now being given two grains of the protoiodide of mercury a day. The chancre is disappearing rapidly; the malaise and general ill-feeling that accompany this period of intoxication are fast disappearing.

To show Dr. Andrews' accuracy in this matter, I wish to mention a case that I recall in the last few days. He declined to make a positive diagnosis, and requested a further examination in this case. In this particular individual there were two ulcers which presented a beautiful clinical picture of chancres, although we know it is quite unusual to see more than one ulcer on the penis. A second examination was made. Those who treat syphillis recognize what an immense advantage there is in making a quick diagnosis. We all have patients to meet weekly on account of the fact that we are not positive as to the diagnosis. It is frequently the case in my own practice that patients leave me and consult other physicians, because I can not tell whether they have syphilis or not, nor do I think any man can tell positively in the very early stages. Hence we are compelled to wait five or eight weeks before a positive diagnosis can be made. This is a period of great trepidation. It means an uncomfortable period

of expectancy, and a period during which the physician finds no pleasure in treating the case.

I do not know of the results of any research that can be more valuable than these. Now we can attack syphilis in the initial stage. We can attack the virus. After the diagnosis is made, we need the intelligent cooperation of the patient, so that there may be great reduction in the tertiary symptoms. I think in the great majority of cases, say 95 per cent., there should not be tertiary syphilides if patients are treated early.

THE DIAGNOSIS AND TREATMENT OF GALL-STONES.

By GEORGE R. WHITE, M.D., Savannah.

The last few years have shown remarkable activity in research upon the diseases of the gall bladder, and a corresponding improvement in our methods of diagnosis and treatment. The recent works of the Mayos, Murphy, Ochsner, Furgason, Deaver, Lilianthal, Bevan and Richardson in this country, with Mayo, Robson, Moynihan, Kehr and Courvoisier, and others, abroad, have made it necessary to rewrite our literature on the gall bladder almost entirely. The classical symptoms of gallstones, namely, jaundice, tumor of the gall bladder and passage of gallstones, will no longer hold good. Jaundice is absent in over 80 per cent of all cases, and when present and unremittent, indicates some disease other than gallstones. The gall bladder is contracted more often than enlarged; and the actual passage of a gallstone is a much less common occurrence than is generally supposed; while the real symptoms of gallstones may be found enumerated among the classical symptoms of chronic gastritis and dyspepsia. Equally radical have been the changes in the views of pathology and treatment.

FREQUENCY.

Cholelithiasis is a very common disease. About one in ten subjects coming to autopsy show gallstones, and about one out of five of adult females. The histories show that in many of these the disease was not

suspected during life. In some the stones had given no trouble, while in others they had caused pain and inconvenience, as evidenced by extensive adhesions about the gall bladder.

CAUSE.

The cause of gallstones is a low-grade infection of the gall bladder or bile passages, with the production of an abundant supply of mucus, from which is precipitated the stones. They do not come from the bile alone, but from a chemical action between bile and mucus, and are never produced except as the result of infection. A foreign body in a healthy gall bladder will not produce a stone. Mignot has occasionally produced them, experimentally, in animals by introducing into the gall bladder attenuated culture of streptococci, and their formation was rendered practically certain in every case if a foreign body was introduced at the same time.

Gilbert has likewise produced them by attenuated culture of typhoid bacilli. It has also been shown that during an attack of typhoid fever the bile is often infected, and starts an inflammation of the gall bladder of greater or less severity. After a time the bile, like the blood, produces the Widal reaction and the bacilli clump; so that an attack of typhoid fever may produce both the low-grade inflammation necessary to the production of mucus and a foreign body in the form of a clump of bacilli as a nucleus for the stones.

A large number of gallstone cases show previous infection somewhere in the abdominal cavity. In Ochsner's statistics 35 per cent of his cases had had typhoid fever, and about an equal number had suffered from chronic appendicitis. Infection from the female generative organs is also a cause, and may account for the higher percentage of trouble among women than among men.

PATHOLOGY.

After the gallstones have formed, it is possible for the inflammation to subside and the stones remain latent throughout the patient's life, though this happy termination is not the rule. They produce trouble by blocking the bile passages and by keeping up the inflammation. If they lodge in the cystic duct without starting up inflammation, the bile becomes absorbed and the gall bladder becomes filled with a clear, viscid mucus, and may dilate to a large size. These cases are rare; usually inflammatory changes predominate. The walls of the gall bladder become sclerotic; fourth to half-inch thick; adherent to surrounding structures, and gradually contracts to a fibrous mass not larger than a lemon.

The complications are numerous. The most common is an acute exacerbation of the inflammation, following blocking of the cystic duct with a stone, and leading to rupture or gangrene of the gall bladder, with its accompanying peritonitis. The rapidity of a process of this kind is surprising, resembling fulminating appendicitis. Other complications are empyema, ulceration and perforation into the peritoneum, or some of the neighboring organs; also, abscesses about the gall bladder or in the liver.

If a stone passes into the common duct and lodges there the pathology is equally varied. It usually produces a ball-valve action, which allows the bile to pass intermittently. The duct dilates behind the stone; the gall bladder contracts, following Courvoisier's law, and more or less cholangitis is present, characterized by enlargement of the liver, jaundice and fever, with sudden exacerbations and remissions.

If the stone lodges at the ampulla it may ulcerate through and escape, or it may remain and produce a

chronic pancreatitis. If it occludes the ducts below, the opening of the duct of Wirsung's, hemorrhagic pancreatitis results, with fat necrosis and death. This subject has been investigated by Opie, who finds that the bile is forced through Wirsung's duct into the pancreas, which injures the pancreatic tissue to such an extent that it is attacked by the pancreatic secretion, with the result above mentioned.

SYMPTOMS.

Pain. The chief symptom of gallstones located in any part of the tract is pain, usually localized in the right epigastrium and over the ninth and tenth ribs, behind, and referred to the right shoulder. Sometimes it is referred down to the crest of the ilium, and rarely it is referred to the left shoulder, but in these cases the head of the pancreas is usually found involved. The pain is described as deep and dragging.

Digestive disturbances are practically always present, and of severe character. The stomach findings are irregular. There is often hyperchlorhydria associated with an acute inflammation of the gall bladder. Vomiting, dilatation of the stomach and eructations of gas are common. Usually there is considerable pain coming on at irregular times after eating, and often in the middle of the night, caused probably by activity of the gall bladder, produced by food passed through the duodenum. The pain is relieved at once by vomiting. Ochsner states that washing out the stomach will often give instantaneous relief, where half a grain of morphine fails.

Tenderness is the most constant symptom. It is localized at a point half way between the tip of the ninth rib and the umbilicus, called Mayo Robson's point, and is best brought out by Murphy's method of hooking the

fingers under the ribs and having the patient take a deep breath; when the gall bladder descends and impinges against the fingers the breathing is suddenly stopped.

Boas Sign. Boas has pointed out that in gall bladder disease there is a point of tenderness over the eleventh rib, on the right side, two inches from the spine.

Colic is present in a certain number of cases, caused usually by passage of stones into the cystic duct or through the ducts into the intestines, and is frequently followed by jaundice. It may also be caused by kinking or twisting of the cystic duct, or the contractions of an inflamed gall bladder upon tenacious mucus, producing conditions resembling strangury in the urinary bladder.

Jaundice is absent in over 80 per cent of the cases; when it occurs with stones in the gall bladder, or cystic duct, it is due to the intestines, or common duct. If the stone lodges in the common duct, there may be no jaundice, though, as a rule, jaundice is present and constant, though remittent, and is to be distinguished from the constant jaundice, without remissions seen in the stricture and malignant growths involving the common duct.

Fever depends upon the severity of infection, and may be absent. As a rule, it is higher when the cystic, common, or hepatic ducts are involved, and lower when the inflammation is confined to the gall bladder. Charcot has called attention to the peculiar temperature curve associated with gallstones. It rises suddenly, remains high a considerable length of time and drops equally suddenly, producing a temperature curve that looks like malarial fever, and the disease is often treated as such.

Tumor of the gall bladder may be present or absent. A sudden stoppage of the cystic duct and acute inflammations produce enlargement, also chronic inflammations, with great thickening of the walls of the gall bladder, but

as a rule a chronic inflammation causes the gall bladder to atrophy. Even in cases of stone in the common duct the gall bladder becomes greatly contracted. This fact was noticed by Courvoisier, who formulated what is known as Courvoisier's law: "In cases of chronic jaundice, due to blocking of the common duct, a dilatation of the gall bladder signifies that the obstruction of the gall duct is due to causes other than stone."

Enlargement of the liver is a common symptom, due to cholangitis. Riedl has called attention to a tongue-like projection from the lower edge of the right lobe of the liver, due to localized inflammation in the liver, in proximity to the gall bladder.

DIAGNOSIS.

Any case of severe digestive disturbance, with pain in the epigastrium, should be looked upon as suspicious. The chief diagnostic points are:

1. Pain in the epigastrium and right side, referred, as a rule, to the shoulder.
2. Digestive disturbances, with attacks of gastralgia.
3. Tenderness over the gall bladder at Mayo Robson's point, better demonstrated by Murphy's method of hooking the fingers under the ribs and having the patient take a deep breath.
4. Boas' sign of tenderness over the eleventh rib, near the spine.
5. A history of typhoid fever, chronic appendicitis, or some other septic process, in the abdominal cavity.

If to these be added typical attacks of hepatic colic, followed by jaundice, passage of gallstones, large and tender gall bladder, or remittent or intermittent jaundice, the diagnosis of gallstones is rendered very probable.

The differential diagnosis is between diseases of the

stomach, including hyperchlorhydria, gastric or duodenal ulcers, and pyloric stenosis, appendicitis, renal colic, Dietl's crises, intestinal colic, gastric crises of locomotor ataxia, and simple or malignant stricture of the common duct.

In diseases of the stomach, the pain is usually referred to the left side and left shoulder, tenderness of the gall bladder and Boas' sign are absent, and the pain comes on at regular intervals after meals. Examination of the stomach contents may show blood or other evidences of disease of the stomach. The chief difficulty in differential diagnosis is the excluding of diseases of the stomach, and in case of doubt these patients should be referred to a specialist in those diseases, who has the necessary laboratory facilities at hand.

Blood in the urine and radiation of the pain toward the groin would indicate trouble with the kidney, rather than the gall bladder. Locomotor ataxia would give its characteristic symptoms, and diagnosis of appendicitis is rarely difficult, unless peritonitis is present. From malignant disease involving the common duct, the differential diagnosis is made by the character of the jaundice, which is deep and constant in carcinoma, also absence of fever, gradual onset without pain, and a large, insensitive gall-bladder, with edema and ascites coming on after a time. The differential diagnosis is often extremely difficult or impossible. Moynihan reports a case that was diagnosed as carcinoma of the liver by Von Jachs, Fenger and Billings, which proved, upon opening the abdomen, to be a case of gallstones, with a small adenoma of the liver. Several other similar cases have been reported.

The only way to be certain of the diagnosis in many of these cases is by a small *exploratory incision* through the

right rectus; no harm is done, and the information gained may be the means of saving the patient's life.

TREATMENT.

While cholelithiasis is being regarded more and more as a surgical disease, not every case of gallstones requires an operation. It is possible for the inflammation to subside, and the stones remain quiescent indefinitely. These cases require the co-operation of the physician and surgeon, as do no few other troubles. The medical treatment should be directed toward relief of the inflammatory condition, plenty of alkaline water, light diet, with but little sugar and fat. A sojourn at Karlsbad is beneficial to many, though it often brings about only temporary subsidence of the symptoms. Sodium glycocholate in five grain doses, three times a day, is one of the newer remedies. It causes a free flow of bile, and theoretically helps dissolve the stones. In practice, however, we have no evidence that the stones when once formed are ever dissolved.

In carrying out the medical treatment one should never lose sight of the fact that he is dealing with a dangerous and treacherous disease; one never knows how an attack will end. While the mortality is small, not over 2 per cent. when conditions for operation are favorable, if we wait until gangrene or perforation have occurred, or prolonged jaundice and exhaustion have broken down the patient's vitality, a frightfully high mortality is incurred. Of ten cases coming under my care, three had passed the point where surgery could give them any relief, and Berg reports that of the sixty-one cases coming to operation at the Mt. Sinai Hospital, twenty-nine had delayed operation until they were in a very serious condition.

Now that the diagnosis and operative technique in these

conditions have been perfected, great advance in treatment is to be looked for by earlier operations. *The preparatory treatment* in cases of jaundice, according to Mayo Robson, consists in giving 30-gr. doses of calcium chloride, three times a day, to aid coagulation of blood and prevent hemorrhage. The utility of this, however, is doubtful, as hemorrhage is due to a degeneration of the liver vessels and capillaries, instead of changes in the blood.

The time for operation presents the same problem as does a case of appendicitis. In general it is best to operate during the quiescent stage, but if the patient is seen during an acute attack with fever and a rapid pulse, with a probability of subsidence on one hand, a possibility of gangrene or rupture and death on the other, the case requires a finer judgment than can be formulated by any fixed rules.

The choice of operation has recently undergone considerable change. The so-called ideal method of removal of the stones and sewing up the bladder, with closure of the wound without drainage, has practically been given up since we understand the septic nature of these troubles.

Cholecystostomy, or opening the gall bladder, and removing the stones and inserting drainage, has a use, but its territory is constantly being encroached upon. Lilianthal recommends removing all gall bladders which contain stones, and the statistics of Murphy and the Mayos show a constantly decreasing percentage of cholecystostomies and an increase in cholecystectomies. Cholecystostomy should be preferred if the gall bladder is not much diseased, the stones can all be removed, and the cystic duct is patent. These conditions, however, are not often found.

Cholecystectomy is indicated in all cases of rupture or

gangrene, and when the gall bladder is thickened, or extensively damaged by inflammatory changes, also in cases of small sclerotic gall bladders, with extensive adhesion. If the adhesions render it impossible to dissect the gall bladder out, Mayo splits it its entire length and dissects the mucous membrane out, leaving the fibrous capsule behind. If the cystic duct is closed and there is no evidence of cholangitis, the duct may be ligated and no attempt made to drain the bile to the surface, but if the cystic duct is patent, it is always best to drain to avoid ascending cholangitis from back pressure of the bile.

Cholecystenterostomy has nearly passed out of use. It might be of service in cases of stricture, but it would not be considered good surgery to perform a cholecystenterostomy for stone in the common duct and leave the stone behind.

Choledochotomy, or cutting the common duct to remove a stone, has come into general use. According to Mayo, no part of the anatomy heals more kindly than does the common duct. It may be opened over the stone or by splitting down the cystic duct, after removal of the gall bladder. After exploring both the common and the hepatic duct to see that no stones are left behind, the wound in the duct may be sutured and the bile drained to the surface through the gall bladder or the cystic duct after cholocystectomy; or a tube may be sutured into the common duct for drainage, and removed in about a week. The latter method is probably the better.

Trans-duodenal choledoctotomy, or opening the second portion of the duodenum and dilating the ampulla of Vater, or incising the common duct through the posterior wall of the duodenum, was first performed by McBurney in 1891, and has been done successfully upon a number of patients.

TECHNIQUE.

The position best suited for operation on the gall bladder is gained by placing a good-sized cushion under the small of the back so as to push the spine forward, elevating the head off the table slightly, to let the intestines gravitate toward the pelvis. With the patient in this position, the liver rotated slightly on its transverse diameter, the gall ducts are arranged into easy reach, even with fat subjects.

The best incision is that of Bevan's, which consists of a vertical incision through the outer fibers of the rectus about four inches long, begun at about the ninth rib. Additional room is gained by cutting the fascia upward and inward to the gladiolus, and still more room by extending the lower end of the incision upward and outward toward the ribs, cutting only fascia, in this way saving both the muscle and nerves. An excessively long incision is not necessary, and the big flap incisions of the German surgeons are to be deprecated. Lilianthal removes a gall bladder through a two-inch incision, which is too small for most surgeons, but indicates the present trend of surgery. The intestines are held out of the way by gauze pads, and a pad placed in the pouch over the kidney before opening the gall bladder. Should cholecystostomy be indicated, the bile is evacuated and a drainage tube inserted, and the gauze packing placed about the tube. The gall bladder may be sutured to the parietal peritoneum, or dropped back into the abdominal cavity, as practiced by Richardson and Bull. In either case the mucous membrane should be invaginated to facilitate healing of the fistula after removal of the tube.

In cholecystectomy the cystic duct is clamped above and below, and the gall bladder torn out from below upward.

If the cystic duct was occluded, a ligature may be placed about it and a gauze drain sutured to the stump; but if it was patent, it is best to ligate the cystic artery only, leaving the duct open, and insert a drainage tube. In some cases it is well to strip back a cuff of peritoneum from the lower end of the gall bladder, making a sort of a funnel with the cystic duct at the bottom, into which the drainage tube may be inserted.

In closing the wound the sandbag must be removed from under the back to relieve the tension of the abdominal wall, and the peritoneum, fascia and skin sutured by separate rows of sutures, leaving a small opening for the drain.

The after-treatment consists in keeping the drain in place until the bile becomes sterile. In some cases they may be removed at the end of a week, while in others they have to remain several months.

Hernia rarely occurs after the operation, and the results are good as a rule. So satisfactory are the results that Bevan makes the statement that the modern surgical treatment of cholelithiasis is, with the exception of the surgical treatment of appendicitis, the most valuable addition made to medicine in the past twenty years, and adds that inasmuch as the general practitioner sees most of these cases in their early history, it rests with him whether or not this valuable knowledge will be made the most of and accomplish the greatest amount of good.

I present briefly the following eight operative cases:

Case 1.—H. C. Was seen first after an illness of several months. A tumor in the right epigastrium was present, and was diagnosed as an abscess of the liver. It was adherent to the abdominal parietes, and upon incision an empyematous gall bladder was found, containing over a hundred stones. A fistula persisted several months, and was eventually cured by cholecystenterostomy.

Case 2.—M. S. Patient had been suffering from jaundice, with severe pain in the epigastrium and attacks of fever for two years. Had been bedridden for two months. Operation performed as a last resort. A small contracted gall bladder containing several stones was removed, and drainage inserted. Died in twelve hours of capillary hemorrhage.

Case 3.—D. M. Patient had suffered from intense pain in the epigastrium and gastric disturbances for several years. No tumor of the gall bladder could be felt. Upon opening the abdomen the gall bladder was found contracted to the size of a walnut, and so adherent to everything that extirpation was impracticable. The parietal peritoneum was loosened and sutured to the gall bladder, following the technique described by Bryant, and the wound packed with gauze. Four days later the gall bladder was incised and several stones removed. The fistula persisted several months, and eventually closed.

Case 4.—C. R. This case was almost exactly like the preceding. The patient had suffered from colic, attacks of jaundice, and pain in the epigastrium for several years. No tumor could be found upon opening the abdomen, the gall bladder was found contracted about several stones, and so adherent to surrounding structures that it could not be extirpated. The parietal peritoneum was sutured to the gall bladder, and the stones removed at a secondary operation three days later. Recovery slow, but perfect.

These two cases would have been suitable for Mayo's operation of removing the mucous membrane of the gall bladder and leaving the fibrous shell to be absorbed, but I was not familiar with the technique at that time.

Case 5.—L. B. Has had pain in the gall bladder three years, constantly getting worse, with fever, gastric disturbances, flatulency and vomiting. The gall bladder was

palpable and tender. There was no jaundice. Upon opening the abdomen the gall bladder was found to be the size of a large lemon, with walls a third of an inch thick, containing four large gall stones and some tarry fluid. The fundus of the gall bladder communicated with a small abscess cavity the size of a walnut in the substance of the liver. As the cystic duct was not patent, it was ligated and a drain sutured to the stump. The gall bladder and abscess cavity were dug out of the substance of the liver, and several sutures taken to prevent hemorrhage. No suppuration occurred, and all drainage was removed on the fifth day. Recovery uneventful.

Case 6.—A. S. Patient had been suffering from severe gastric disturbances for six months, with pain, constant vomiting and symptoms resembling ulcer of the stomach. She had been confined to the bed for eight weeks, and was rapidly emaciating from fever and incessant vomiting. There was slight jaundice. The gall bladder was palpable and very tender.

Upon opening the abdomen a thickened gall bladder was found containing several stones, and one stone was incarcerated in the cystic duct. The gall bladder was extirpated, and a drain sutured to the stump. Recovery uneventful.

Case 7.—M. M. The patient had never thoroughly recovered from an attack of typhoid fever contracted six months previously. When first seen she had been in bed with vomiting and pain in the right side, referred to the shoulder, and tenderness over the eleventh rib. The fever was remittent in character, with rapid rises and falls, and resembled malarial fever in many respects. The gall bladder was palpable and very tender. Upon opening, the gall bladder was found thickened, adherent to the colon and omentum, and covered with lymph. It contained sev-

eral stones and some bile-stained fluid. One stone was impacted in the cystic duct, but did not completely block it. The cystic duct was cut across and drain inserted, and the gall bladder extirpated. Bile flowed from the drain three weeks, after which the serus healed and recovery uneventful.

Case 8.—M. C., age seventy-five years. Patient gave history of attacks of colic, with pain in the right side. When first seen he was in collapse, with abdomen distended and painful, with swelling and tenderness over McBurney's point. A diagnosis of ruptured appendicitis abscess was made, and incision made over appendix. Large quantities of bile-stained fluid evacuated. Appendix normal. The fluid had come down along the inside of the colon and pointed in the region of the appendix. Incision made through right rectus and a large gall bladder containing numerous stones of various sizes was removed. There were also several stones free in the abdominal cavity. Peritoneal cavity washed out and drained. Died in twelve hours.

To these eight operative cases are added two other cases illustrating different phases of the disease.

Case 9.—Patient had an attack of gallstones with jaundice, a month previously, and partly recovered. Attack returned ten days previously with great pain and fever, constantly getting worse. Was in collapse when first seen, with symptoms of peritonitis, and sent to the hospital, where she died, without operation, about twelve hours after admission. No autopsy allowed. Probably a case of rupture of gall bladder.

Case 10.—Patient had had several attacks of hepatic colic. When first seen had suffered a week from intense pain in the epigastrium and vomiting. Gall bladder enlarged and tender. Slightly jaundiced. Temperature

ranging about 100, pulse rapid. Was kept under observation five days and given medical treatment. Symptoms gradually grew worse, and patient became very weak. Was sent to the hospital for operation. The gall bladder could be seen distinctly pushing up the abdominal wall just before the anesthetic was begun. During the anesthetic she vomited a large quantity of green fluid. When she was brought into the operation room the tumor had disappeared. No operation was performed. Temperature and pain subsided and she went home the next day, and has had no trouble since.

DIFFERENTIAL DIAGNOSIS OF GALLSTONES.

By J. T. ROGERS, M.D., Savannah.

In the diagnosis of gallstones we want to bear in mind that from fifty to eighty per cent. of the cases of gallstones have no jaundice, and that many have no rise in temperature. We should also remember that gallstones are more frequent in women than in men, three or four to one.

It has been said that "indigestion is the most common symptom of gallstones." This very probably is true in chronic cases of cholelithiasis, and for this reason we often find it very hard to distinguish between cholelithiasis and many of the stomach troubles.

In periodic continuous flow of gastric juice, or gastrosuccorrhea continua chronica, we find pain, often severe, coming on four to five hours after eating, as in gallstone colic. But we find in gastrosuccorrhea continua large quantities of clear gastric juice with a high degree of free hydrochloric acid. If examined with tube we often find eighty to one hundred c. c of gastric juice and in four to six hours the same quantity may be vomited. The pain in gastrosuccorrhea continua is more on the left side and reflected to back on the left of spine, while the pain in gallstones is more to the right of the median line.

Gastric ulcer is often hard to distinguish from gallstone colic, but we find that the pain in ulcer is nearly always increased upon the ingestion of solid food, while

the pain from gall stones is not affected by taking food. The pain from gallstones is usually reflected to the back about the region between the ninth and eleventh ribs to the right of spine. Pain in ulcer may be reflected to the back, but on left side. There may be long intervals between the attacks of pain from gallstones, but the pain from ulcer is more continuous. We find in ulcer an excess of hydrochloric acid, while in cholelithiasis it is either normal or decreased.

If we have hematemesis or find blood in the stools the diagnosis of ulcer is of course easy. The pain from gallstones usually comes on while the stomach is empty, while the pain from ulcer comes on right after eating, or is made more intense by eating.

Duodenal ulcer, especially in the horizontal portion, often causes pain and tenderness in the region of the gall bladder, but the pain usually comes on two hours after food is taken. We are more apt to have a rise in temperature in gallstone colic than in ulcer of the duodenum. Ulcer of the duodenum is very rare in women—more frequent in men. Ulcer of the duodenum may give no symptoms till perforation. We may have hematemesis and melæna or may have melæna without hematemesis.

In cancer of the stomach the pain is more constant, but not so severe. We usually have a lack of hydrochloric acid in cancer of the stomach, and the presence of organic acids, especially lactic. It is possible for the hydrochloric acid to be in normal quantity or increased. If we can find the presence of a tumor or hematemesis and particles of tumor in wash that we may examine under the microscope, then the diagnosis of cancer is more easily made. The pain from gallstones is often relieved by vomiting, and causing the stone to drop from the neck

of the gall bladder back into the gall bladder by spasmodic contraction.

In gastralgia the pain is not so severe as in gallstone colic, and is more to the left of the median line. There is more apt to be a rise in temperature in gallstone colic than in gastralgia. No tenderness in the region of the gall bladder in gastralgia.

In cancer of the gall bladder or common duct it may be impossible to make the diagnosis without an exploratory incision—unless a few weeks' time be given when cachexia, loss of weight and the appearance of a tumor may make diagnosis easy.

Chronic jaundice, not intermitting, is characteristic of malignancy. Pain in cancer of gall bladder or common duct is more constant, but not so intense as in gallstone colic. Gall bladder in cancer is large and nodular—while in fifty to eighty per cent. of cases of gallstone the gall bladder is small. Jaundice due to gallstones is always preceded by colic, but when due to malignant disease or catarrh of the duct it is never preceded by colic, and the pain in gallstone colic is reflected to the back between the eighth and eleventh dorsal vertebra on the right side. It is sometimes mistaken for renal colic. But in renal colic the pain is apt to radiate down the ureter instead of forward toward the epigastric and hypochondriac regions. And the kidney is tender on palpation and the urine may contain blood, pus or albumin—but is free from bile.

A floating kidney on the right side may give symptoms of gallstone. Diagnosis is made by detecting the floating kidney and upon the symptoms disappearing when nephroptosis has been relieved by belt and pad or by a nephropexy. If the pains and jaundice continue there is apt to be cholelithiasis too.

In acute gastritis the pain is not so severe, but the abdomen is more distended and is more tender.

The pain in gallstone colic may be reflected to the right iliac fossa and resemble an attack of appendicitis. The reflexion of the pain is caused by a local peritonitis extending to the serous coat of the appendix.

In mucous colitis the pain is sometimes severe enough to resemble gallstone colic—but after a careful examination of the stools the characteristic casts are apt to be found when the diagnosis is made easy.

Membranous cholecystitis with biliary colic has been reported with mucous colic.

Intestinal lithiasis following an intestinal colic may easily be mistaken for biliary colic. There are two kinds of intestinal calculi—the true and the false. The false calculi are caused by the residue of foods, fruits, etc., as pips of pears, vertebrae of sardines and salts or drugs, as magnesia and salol. Also after taking olive oil saponified masses may be passed which look like softened gallstones.

True intestinal sand is composed of calcium phosphate and is probably caused from a lithogenic catarrh of the intestine. The presence of intestinal sand is often associated with mucous colitis.

In acute pancreatitis there is more profound collapse and the pain is more intense, more constant and is more in epigastrium. We may have gallstones and acute pancreatitis together, as pancreatitis can be caused by a gallstone situated at lower end of common duct, causing inflammation to extend into Wirsung's duct. Chronic pancreatitis may be caused by stone in ampulla of Vater obstructing the outflow of juice from Wirsung's duct. A tumor on the head of the pancreas may cause jaundice by pressure on common duct.

Hepatic crises in tabes may cause colic and jaundice. The Argyle Robertson pupil with loss of knee jerk indicates tabes.

Neuralgia of the liver—called by Osler pseudo-biliary colic—is seen mostly in nervous women. There is no rise of temperature and no jaundice, and is often brought on by emotion or excitement.

Neuralgia of the abdominal sympathetic nerve may be confusing, but pain usually begins at navel and is more stabbing than in biliary colic.

In lead colic we have the bluish gray line on the gums —the history of his trade—contracted abdomen and obstinate constipation.

In copper colic the pains are very much the same as in lead colic, but more severe. In copper colic we have vomiting and diarrhea, abdomen distended and tender.

The pain in back caused by biliary colic has been mistaken for lumbago.

In stenosis of the duodenum the pain may resemble biliary colic, but we find food retained in the stomach.

In intestinal colic the pain is more diffused over the abdomen and the abdomen is more distended.

Fecal accumulation under certain conditions in transverse colon may cause colicky pains—and finding of hard masses of fecal matter in region of the gall bladder may cause doubt in the diagnosis.

Calculi in the common bile duct may cause an intermittent hepatic fever resembling malaria—but there is no reaction to quinine and no malaria parasite found in the blood. The presence of jaundice in the interval between attacks of fever suggests cholelithiasis.

The presence of a gumma or the traction exerted by syphilitic cicatrices in the portal fissure may lead to obstructive jaundice and in rare cases this obstructive jaun-

dice is accompanied by attacks of pain resembling biliary colic—but not due to gallstones.

In any case of probable cholelithiasis with well marked signs of tertiary syphilis, iodides should be given before operating.

The pain in hyperchlorhydria or superacidity of the stomach, comes on two to three hours after meals, and is relieved by large doses of an alkali, or by a little albuminous food. A glass of milk will usually relieve the pain of hyperchlorhydria in a very few minutes, while the pain in gallstone colic comes on usually four to five hours after meals and is not affected by taking food.

DISCUSSION ON DR. WHITE'S AND DR. ROGERS'S PAPERS.

Dr. John W. Daniel, of Savannah: I would like to say, in reference to Dr. White's paper, that there is a very important point to be borne in mind by practitioners in South Georgia, especially where we have to deal with more or less malaria, and if it is this, that there is very little or no pain accompanying conditions in the gall bladder, but if there is pus we have a febrile condition, which simulates the estivo-autumnal form of malaria, and the physician is liable to fall into the error of treating his patient for malaria until there is rupture of the gall bladder, which precipitates a crisis or collapse, and the surgeon is called in too late. I recall to mind a case of that kind myself where the patient had no pain that was localized, but she had the typical estivo-autumnal temperature, and upon examination of the blood (I paid no attention to leucocytosis) I found the parasites and treated the patient for several days for malaria, but she grew gradually worse. We then found that she had involvement of the gall bladder. A surgeon was called in, and upon operating two stones were removed and the gall

bladder was found filled with pus. A very important point, then, for the general practitioner is the difference between malaria and the fever which we get in these conditions.

Dr. St. J. B. Graham, of Savannah: Dr. White did not go into the subject of medical treatment of gall-stones very deeply. There is one suggestion I had made to me several years ago by a distinguished anthropologist, who had been traveling in India, and who had been the subject of gall-stones for many years. The elder Brunton, who was then a member of the Hyderabad Chloroform Commission, saw this man in consultation. One physician whom the man with gall-stones consulted advised operation, while the elder Brunton did not. He advised the patient to take a lozenge of Spanish castile soap, weighing about a dram, after each meal. It was my good fortune to meet the gentleman some ten years later, and he told me about this instance when consulting me for some other condition. He took these lozenges for a period of two years. He took one lozenge after each meal, weighing about a drachm. He said he had never had an attack since, but previous to that he had on an average of four or five attacks a year. He was very much emaciated from the trouble.

I have since tried this treatment in four or five suspected cases of gall-stones, and in one case of absolute gall-stones, in which it proved very satisfactory. Of course, one swallow does not make a summer, but many swallows point to an early fall. Following that custom, I kept up this treatment, and one case I treated four months ago, and, so far as I know, all of these patients have had no trouble since. One has been taking the treatment for four years. It has advantages over olive oil, which some patients object to.

There is very little that I can add to Dr. Rogers's paper, except possibly to mention the value of a chemical or microscopical examination of the urine, in which, while we may not find gall-stones, we may find a condition that is pathognomonic of something pointing to a diseased condition of the gall bladder. For instance, we may find small phosphatic deposits and also oxaluric deposits, which point to a condition of faulty metabolism which has aided in producing gall-stones.

Dr. Henry R. Slack, of LaGrange: Dr. Rogers, in speaking of the differential diagnosis, mentioned the finding of blood in the urine as being of value in differentiating between renal and hepatic colic, but he said nothing about the finding of bile being of value. I have frequently found bile in the urine following colic, but absolutely no jaundice. There is a simple test for detecting bile in these cases, namely, dust a little powdered sulphur in the test tube that contains urine, and if there is bile the powdered sulphur will float in twenty-four hours and will not sink. If there is a less quantity of bile, the powdered sulphur will sink, and it will go right to the bottom.

Dr. L. Amster, of Atlanta: The question of gall-stone colic is one that the general practitioner has to contend with, inasmuch as he meets very frequently with cases of that kind. Very often the differential diagnosis between stomach and gall bladder troubles is quite puzzling to the general practitioner. The suggestion that we refer every one of our gall-stone cases, or those in whom we suspect gall-stones, to the surgeon is not quite in harmony with the possibilities of what we can do in general practice for these patients. We can not induce all of our patients to undergo operation. Many of them can not afford it.

Some will not do it, and others have an aversion to operations.

Kehr and Naunyn, who have made special studies on this subject, distinguish three kinds of cases referred to as gall-stone diseases. It is unnecessary to get jaundice and enlargement of the liver in gall-stones. We may have gall-stones without those symptoms. It is unnecessary that we have fever and pain. We find cases who occasionally have an attack of pain, with tenderness over the liver. There are other cases in which we may find jaundice, and still others in which there is pain, jaundice and enlargement of the liver. I have seen a large number of cases at the Polyclinic who were opposed to surgical treatment, where we had a class of people to deal with who would not submit to operation. Those people usually did very well on medical treatment, especially the first class of cases. They were advised to go to bed for a week or ten days, and to have themselves poulticed over the region of the liver; to take Carlsbad salts, combined with a plain nutritious diet, and many of these cases were materially benefited for the time, and many of them were kept on this treatment for six months or a year, or the treatment was repeated again, whenever the slightest pain appeared. They did fairly well under medical treatment. Of course, there are cases that belong to the surgeon from the beginning, just as cases of appendicitis are surgical from the beginning.

Dr. W. S. Goldsmith, of Atlanta: Dr. Amster's remarks were directed to the subject along the line of the general practitioner. I regard gall-stones as purely and simply a surgical disease, and they should be attacked in an operative way. We have no evidence that gall-stones disappear after a course of medical treatment. Certainly the cause or causes have not been permanently removed.

The patient may be relieved for six months or a year, but it does not necessarily follow that because relief is obtained the case will not be a recurrent one, or that there will not be the reformation of gall-stones. Therefore, I think as soon as we suspect gall-stones they should be looked upon as foreign bodies elsewhere and removed, the same as a stone in the kidney, the ureter, the bladder, etc.

As to the method of treatment recommended by Dr. Graham, I would rather be operated on than to take soap three times a day as a sort of bolus for lubrication.

The absence of jaundice in so many of these cases is not necessarily indicative of the fact that gall-stones do not exist. The fact of the matter is, the presence of jaundice is an exception.

Another point: In the examination of adult males who are old enough to have contracted venereal disease, old enough to have tertiary syphilis, either male or female, but especially in the male, we should be very careful to elicit a history of syphilitic or venereal infection, if possible. I have had two cases in the last two years which forcibly brought to my mind the importance of going thoroughly into the specific history of these cases. Both of them responded beautifully upon the administration of iodide of potash, increased daily until large doses were given.

In the matter of drainage, of course the technique of operating upon gall bladders with or without sewing up the gall bladder without drainage is practically obsolete. We know cases that have been closed at once have had a recurrence of the condition, or the reformation of the gall-stones. We effect removal of the deposits by complete and thorough drainage.

I am afraid I misunderstood Dr. White in reference to anchorage of the gall bladder. Of course, it is entirely

essential to make a firm fixation, a firm anchorage when you have a tube in the bladder, otherwise if vomiting occurs it will cause the viscera to impinge upon the gall bladder, thereby dislocating the drainage tube, followed perhaps by leakage, with general peritonitis. I think possibly I may have misunderstood him; at any rate, the gall bladder should always be fixed.

Neither one of these essayists brought out the importance of making an examination of the gall bladder when other abdominal operations are being done, provided these operations were clean and on clean cases. I do not think any one would make an extensive intraabdominal examination in a pus case, but I recall one case that I saw in consultation some time ago. After a large ovarian cyst was removed, the suggestion was made to examine the gall bladder. The surgeon examined the gall bladder, and the result was there were one hundred gall-stones evacuated from that gall bladder.

One of the main points I wished to lay stress on was that in the male cases we should have proper regard for a syphilitic history, as these cases will frequently surprise us in a clearing up of the gummata upon the administration of large doses of the iodide of potassium.

Dr. H. McHatton, of Macon: I am glad to have had the opportunity of hearing these papers. Perhaps more errors are made in regard to the diagnosis of gall-stones than any other one condition in the abdominal cavity. We see mistaken diagnoses every day. Real conditions are frequently overlooked. This is a very important subject, and the gentlemen who have read the papers have covered it so thoroughly that there is very little left to be considered in the way of discussion.

Whether every man with gall-stones should be operated on or not is a question. Surgical they ought to

be, but a great many people would not submit to operation, hence we are called upon to try and relieve these patients by medical treatment. While I have not tried the Spanish castile soap, recommended by Dr. Graham, in these cases, yet I have used olive oil very often, and I find that it benefits many of these cases, and in others it renders the attacks less frequent. That is about the only benefit I have found from medical treatment. When these patients have severe attacks, lose in weight and strength, we should advise operation, although many of them are not willing to submit to it. However, operation is their only hope.

Dr. C. L. Williams, of Columbus: These papers brought to my mind a case I had two years ago. A young man, about twelve months before I saw him, had an attack of typhoid fever. He was not troubled with diarrhea, and when I saw him I thought he had malarial fever, as he was complaining of pain in the right side. This side was tender, but after giving him quinine I was satisfied I was mistaken in my diagnosis. The pain began to get very severe. He had fever. Finally, the pain was so excruciating that I had to give him large doses of morphine. He continued to have these paroxysms of pain, and the question arose in my mind whether the case was one of gall-stones or not. He had no jaundice. Two other physicians were called in to see this case, and after the patient was sick for a long time without improving in any respect I called in a surgeon. His idea was that there was some specific trouble connected with the case, yet I was unable to elicit any history of syphilis. The patient denied having syphilis or gonorrhea. He was gradually losing flesh, and finally, after making a careful examination, I discovered a fluctuating point a little above the appendix. One of the physicians said he thought the

man had appendicitis. We called in a surgeon again, who made an incision and evacuated a large quantity of pus. He traced the track clear up to the liver. The wound was washed out thoroughly with antiseptics. The patient was taken to the hospital then, where he could have better care and attention, but he gradually declined until he died. We prevailed on the mother of the young man to let us examine his liver. She kindly consented. We removed the liver, and found about four inches of the lower margin of the liver, extending up I suppose about two inches, all swept away. I have never been able to ascertain the cause of this trouble.

Dr. Howard J. Williams, of Macon: I was very much pleased in listening to the reading of these two papers on gall-stones and gall bladder trouble. I am of the opinion that the disease is a surgical one, and the opinion of the surgeon should always be taken of this condition. I have had the pleasure of operating for gall-stones six times. In two cases the results were fatal. The gall bladder was gangrenous. I have seen two deaths from gall bladder trouble because the advice to operate was declined. One case, particularly interesting to me, was that of a prominent lady in our city, who was taken to the hospital before operation. At the time she was taken there the indications were that the operation would be successful. She improved there, and on the advice of her physician an operation was declined. Three months afterwards she had a recurrence of the trouble, followed by death in thirty-six hours from acute pancreatitis. This case convinced me that this disease should be classed among the surgical diseases, and the opinions of surgeons should be taken. While medicinal treatment may give temporary relief, I doubt whether it is permanent, and where gall-stone trouble is present I believe the gall bladder should

be opened and drained. Incision and drainage in ordinary cases will give permanent relief.

Dr. William H. Doughty, Jr., of Augusta: I rise more particularly to express my thanks to these gentlemen for their interesting papers and the interesting discussion that has been added on this subject.

I am not altogether in accord with Dr. Williams, who thinks that this is a purely surgical disease, if I understood him correctly. I think most of these cases should be operated on, and possibly it might not be a bad plan if all were operated on, seeing that the mortality of early operation and operation in simple cases is very small. However, there are a good many people who have gall-stones who know they have them, or are told they have them, who are not willing to submit to surgical interference, and it is well to know something can be done for these people, with some possibility of affording relief, just the same as in those cases that are operated on. We have heard that soap taken three times a day will do it.

Last winter I saw a man who weighed 325 pounds. He was swallowing a bottle of olive oil every day to keep him from having gall-stones.

I wish to tell you of another remedy that I have used quite a number of times, and apparently with benefit. That remedy is not an original one with me, but I got the idea of its use a good many years ago from Dr. Tyson. I refer to succinate of soda. I have used it often in from three to five grain doses, given three times a day, which if kept up for a long time will give great relief to patients suffering with gall-stones. More than that I can not say.

The diagnosis of gall-stones is many times exceedingly difficult. Possibly it may be of some service, in which the difficulty of the situation is very well known. I saw a man some five or six years ago who had what seemed to

be violent paroxysms of gall-stone colic. He was not operated on. He went to New York later on, and was seen by two physicians there. He had one of his attacks, and a diagnosis of gall-stones was made. He was urged to be operated on, but declined. Later on he saw a physician in Philadelphia or in Pittsburg, I forget which, who made the same diagnosis. He also saw another physician in Richmond. This man traveled about a good deal, and after going from place to place, and being troubled with gall-stones, he turned up here in Augusta to be operated on. I operated on him. He not only did not have gall-stones, but so far as I could see there was no evidence that he ever had any. If there was a healthier gall bladder and gall ducts than we found in this case, I have never seen them. I could not find anything the matter with them. Possibly the best part about it is that the operation cured the man. He has never had an attack since. Before that he rarely ever went more than ten days without an attack. You can take the report of this case for what it is worth.

Let me mention a little point in the technique. Dr. Goldsmith inquired about stitching the gall bladder to the parietes in operation in drainage cases. That is not necessary. You can fasten the drainage tube in the gall bladder securely with purse-string suture and drop the gall bladder back into the abdomen. That can be done with perfect impunity, and by the time the purse-string suture is loosened up enough to permit leakage, the adhesions will have formed around the tube, so that you will have a canal leading from the gall bladder when you choose to remove the tube.

A Member: The statements of the various gentlemen in discussing this subject show conclusively that patients

frequently get well in spite of all kinds of treatment, surgical or otherwise.

In regard to the treatment of gall-stones, I have been meeting these cases frequently in my practice, and I must confess that I have never found any treatment that I thought was worth anything.

Dr. White (closing the discussion on his part): I wish to thank the gentlemen very heartily for the generous discussion they have given my paper. The only point of difference seems to be how many of these cases should be operated upon, and I do not think we can decide that off-hand. Dr. McHatton, in his paper, laid down general principles for cases of that kind. These cases come before the general practitioner. If he can give them olive oil, soap, or the succinate of soda and cure them, or make them comfortable, that is all right, and the patients may be satisfied. But if these patients are slipping away from the general practitioner, or getting worse, or having attacks of jaundice and attacks of colic, gangrene with perforation of the gall bladder is liable to occur at any time, and I would like to make an earnest plea that a surgeon be called in to cooperate with the general practitioner in order to save the patient's life, because as it is now conditions are unsatisfactory. In New York, at the Mt. Sinai Hospital, it was found that 50 per cent. of cases of gall-stones coming into that institution were in a bad state, so that operation was dangerous. In ten of my cases three were practically moribund when I saw them, and I hope that condition of affairs will no longer exist among members of the profession.

Dr. Rogers (in closing): I have nothing further to say, except to thank the members very kindly for the points they have brought out.

MEDICAL ETHICS.

By M. A. CLARK, M.D., Macon.

In the discussion of this subject, it is hardly amiss to remind you that Ethics, derived from the Greek word meaning character, is the science of conduct with reference to right living and to the attainment of the greatest good. The word *right* is from the Latin, meaning according to rule; and it has been thought wise to lay down certain fundamental rules or principles upon which Ethics is based.

Besides these rules that pertain to the general conduct of life, it is well that we have such others as apply to the different phases or vocations of life, especially to the professions. So, we have for our consideration, as medical men, Medical Ethics.

It is argued by some that it is folly to have a code of Medical Ethics, because all medical men are gentlemen and every gentleman knows what is right and how to act.

This is probably true of those who have spent years in the profession and have had the opportunity of being associated with the best men of the profession. To the young men of the profession, a Code of Ethics is a most essential and valuable guide, and when properly studied and duly practiced, it will not only add to their self-respect and the respect of the profession, but may save them from blunders that cause much mortification and not a few heartaches.

It is not time lost to discuss this subject, even before

those of years of experience, for they have sometimes thoughtlessly fallen into the habit of disregarding some of the smaller but no less important points of Ethics. I think it is unfortunate that our colleges do not give more attention to this subject, and I hope it will not be long before it is a part of the course of every senior student.

I never heard this subject discussed when I was a student, nor have I ever heard a discussion of it in this Association. Alas! how often have I known and heard of violations of it!

In our consideration of this paper, let us remember that we are not followers of a trade, working for the dollars that it brings, and ready at any time to exchange it for some other that will yield us more dollars. We are members of a profession, prepared for it by study, natural inclination, and a love for the betterment of humanity. Our chief aim should be to prevent and cure disease, and our greatest efforts should be such as will the better prepare us to accomplish this. At no time should we allow the fee to be the height of our ambition. He whose eyes are dazzled by the luster of the "almighty dollar" can not practice scientific medicine.

We are not rivals trying to get each other's patients, but are colleagues striving to serve faithfully and wisely our own clientele and should be ever willing and ready to help each other by word or deed to attain a high place in our profession, to be honorable members of the noblest of professions.

The lens of altruism should be ever so adjusted that it will collect the rays of opportunity and so concentrate them upon the lives of mankind that they will reflect brightness and gladness upon all within their sphere.

I invite your attention to the following subdivisions:

OUR DUTY TO THE PUBLIC.

It is beneath the dignity of any physician to boast of his skill or to describe some wonderful operation performed. His knowledge and skill are not wares to be exploited before a gaping public for them to judge whether or not they are brass or pewter or true gold from the refiner's fire. I can not recall ever having heard of a truly learned physician or skillful surgeon boasting of his ability to cure disease or perform surgical operations.

We should at all times be ready to advise the public with reference to sanitation and to the prevention and stamping out of contagious and infectious diseases. In all such cases, we should let it be known that our opinions are of such importance as to be of a monetary value, and we should demand reasonable fees wherever there is ability to pay.

We should condemn quackery in every form and help in every way to overcome it. Nothing will be more conducive to this end than the avoidance on our parts of everything that even savors of quackery.

We should exercise our rights as citizens and by example and by ballot should uphold the right without regard for fear or favor, remembering that as public men our influence is great or small as we assert these rights with firmness and modesty or with indecision and fear.

OUR DUTIES TO OUR PATIENTS.

It is hardly necessary to remind you that it is always the duty of the physician to give every patient careful thought and study, and above all else to examine thoroughly to find out the real condition before attempting treatment. At all times be honest, firm, gentle, sympathetic, attentive, hopeful, remembering that the psychic effect will have much to do with the welfare of the patient.

Having once accepted a case, it is our duty to attend that case till it terminates in recovery or death. In event of our inability to give proper attention, we should be ready to give our opinion to the colleague who takes charge.

We should never give up a case because it is incurable or because there is no prospect of remuneration. It is our privilege to refuse to attend any patient for any reason we deem fit, but, when we have once begun to treat a case, we should not give it up for any trivial cause or for lack of monetary reward.

OUR DUTIES TO THE PROFESSION.

We would strive to advance and ennoble our profession and to command the respect from the public our high calling so richly deserves and yet so often does not receive. We can do this much more effectually by joining our county and State associations, attending their meetings as often as possible, and taking part in their work. We should not only study and make original investigations ourselves, but should also encourage others to do so. We should feel and show a great pride in our profession at large, and should be ambitious for our local profession to be the very best.

All physicians and their families dependent upon them are entitled to the gratuitous services of their professional brethren in their immediate vicinity only. At no time should a physician from a distance be expected or allowed to come and give his professional services to us or our families. He should be paid at least for actual expenses, and when able to do so, we should compensate him for the time lost from his practice.

We should be always ready to give every attention to a colleague who is sick, and at all times should allow him to choose his own medical adviser. It is well for his

medical friends to call and enquire about his welfare, but they should in no way interfere with the management of the case.

In sickness in the family of any physician, when a colleague is requested to treat the patient, he should be given entire charge of the case, and we should be as careful not to interfere in the management of it as we would were the patient one of the attendant's regular clientele.

When the gravity of the case is such as to call for a consultant, we should not be present at the consultation, nor take part in it, for by so doing we often embarrass the consultants and interfere with the proper management of the patient. Of course, we have the right to know the result of the consultation and the privilege of accepting or rejecting the advice given.

Emergencies: Whenever called in emergency to a patient of another physician, we should attend only to the necessities of the emergency and leave a written statement under seal of what we have done, to be given to the family physician when he calls. If the attending physician is sick or absent and the case needs further attention, we should attend only till he recovers from his illness or returns to his practice. He will then take charge of the case, having been advised of what was done in his absence. When attending another's patient, we must be careful to say or do nothing that will reflect in any way upon the absent colleague.

Whenever in any emergency case more than one physician attends, the one arriving first should take charge, and he will retire on arrival of the family physician, unless requested to remain and assist. In such cases, however, every one attending is entitled to his fee and should send in a bill for it.

When called to patients under treatment of a colleague, and no emergency exists save in the mind of the patient or some member of the family, we should advise that the regular attendant be called, and should refuse to express an opinion of the case or prescribe for it. If advised that the attending physician has been dismissed, it is wise to consult him before taking charge of the case.

We should teach the laity that we are not servants to be hired at their beck and call and dismissed according to their whim. They should be reminded that certain courtesy is due every one of us, and we should never countenance any slight or discourtesy to a brother physician.

Consultations: The old saying that two heads are better than one is as true in medicine as in any vocation of life, and we should be ready to have consultation when desired, and it is wise to request it ourselves with our very ill patients. Let us rid ourselves of the false notion that it is a reflection on us to be requested to have consultation. Consultations when wisely and conscientiously conducted will often benefit the patient, and will always be a comfort to the family and a source of relief to the family physician.

The chief object of the consultation should be the welfare of the patient, and we must never allow personal feelings or petty jealousies to prevent the accomplishment of that end.

We should always be prompt, and in event of unavoidable delay, should notify the attending physician, if possible, and in this day of telephones it is possible. Where advice of delay is not possible, the physician first arriving may wait a reasonable time, and if the other does not arrive the consultation is postponed until another appointment. If the consultant arrives first, he

will wait the coming of his colleague before entering the sick-room.

When in a consultation the patient is found to be doing well under the treatment given, it is the duty of the consultant to advise no change in treatment. It is a mistaken idea that the consultant must do something simply because he has been called. The welfare of the patient is the chief end desired, and when that is assured all has been done that is required. When a change in treatment is indicated but not imminent, it is well to suggest that the attendant make the change at his next visit.

In the consultation it is best to agree as to the condition of the patient, and the regular attendant will give the opinion to the family. Whenever there is more than one consultant, it is wise to have the opinion expressed in writing and signed by all present. In all cases it is prudent for the directions to be written and agreed to before being given to the nurse.

After an agreement in consultation, it is incumbent on the attending physician to have that treatment carried out, and he may make no change unless some emergency arise, and then he will advise the consultants at the first opportunity, giving his reason for the change.

In an emergency, if the attending physician can not be secured, the consultant may visit the patient and relieve the exigency only, and he will see that the attendant is notified of what has been done. In this visit he will be very careful to express no opinion at variance with that agreed upon in the consultation.

If in a consultation an agreement is impossible, a third physician should be called and the opinion of the majority should prevail. If it is impractical to secure a third physician, the consultant may retire, leaving the family

physician in full charge. It is rare that two gentlemen can not agree in such cases.

Only under very extraordinary circumstances should a consultant take charge of a patient, whom he has seen in consultation.

When called in emergency to an obstetric case, after the emergency is relieved, the case should be resigned to the regular physician. In all such cases the one attending is entitled to a fee for the services rendered.

Specialists: In all cases where there is a question of special treatment being indicated, the patient should be encouraged to consult the family physician as to whether or not special treatment is needed and by whom it should be given. In the large majority of such cases, the family physician's opinion will be of no little value to the specialist in his management of the case. Greater good will redound to the patient if the specialist and physician will work together.

In those cases where an operation is indicated, the regular physician should be advised before an opinion is given to the patient, and only in very grave conditions should an operation be performed without advising with the family physician.

Because a physician is a specialist, he is none the less excused from the observance of the same principles that apply to other physicians' prescribing for or taking charge of the patients of others, and he should be equally as careful in the observance of these rules.

In every case, my colleagues, let us ever be mindful of the Golden Rule: "Do unto others as we would have them do unto us," and we will have a better and nobler profession, and our work will be more pleasant and far less onerous. We will have more respect for ourselves, and the public will honor us as we deserve.

DISCUSSION ON DR. CLARK'S PAPER.

Dr. Lattimore, of Savannah: I wish to thank Dr. Clark for his very able and instructive paper. The paper is a classic. It is a subject that, at times, we are all at sea about. We do not know what to do. The doctor has not only given us a general idea, but he has given us a classical paper on medical ethics. When that paper appears in the Transactions of this Association in 1906, and we obtain our copies, if we will go over it carefully, study it as we would our anatomy, in the future we will obtain as much benefit and help from it as from anything else in the way of a paper that has been written on medical ethics. I feel that this subject is not only pertinent at this time, but it is one that will be lasting in its effect from the way the doctor has put it to us, and I want, again, to thank him for presenting it. I shall prize my copy of the Transactions in which this paper appears very highly.

Dr. W. B. Hardman, of Commerce: We have not had many discussions on this subject, and I think the reorganization of the Association on present lines will tend to help in a great measure the differences that have occurred in different localities. It is not an uncommon thing to see one physician carrying his gun for the other. A thing of that kind is always uncalled for, and when such a state of affairs obtains, there are two people to blame. There is never one only, and I think in the organization of our county medical societies we will be greatly benefited along this line, because a great deal of the trouble which arises between physicians is due to the fact that they do not know one another better. We are all busy about our own business. We are called in consultation, or we step in to see a patient, and most of the time we take the statements of the laity. They do not intentionally misrepresent things,

but physicians get misunderstandings from unintentional misrepresentations. And I believe if we come together in our local societies and touch elbows and bear in mind that our brother physician is just as much of a gentleman as we are, it will be better for us all. I have seen men who seemed to go on the idea that everybody else was a rascal but themselves, and they were always looking for trouble. If we reversed the matter and always feel that our brother practitioner is just as good as we are and just as much of a gentleman as we are, and just as inclined to do the right thing as we are, nine times out of ten we will be better off. I believe our brother practitioner is just as ready to do the right thing as we are, and I think these differences in ninety-nine times out of a hundred are entirely uncalled for. They won't stand fire in every instance. They can be smoothed over, so that there should be no trouble between one physician and another. In seventeen years practice I have never had any trouble with my brother physicians. I do not let men run over me. But as molasses catches more flies than vinegar, if you go to a brother physician, after having thought you treated him wrong, and explain matters to him, and do it in a gentle way, you will get the difficulty settled and you will make a friend. I believe in our local societies we will be a great help to one another by coming in contact with one another, and not looking upon one another as an enemy.

Dr. T. J. McArthur, of Cordele: This is one of the most important papers that has been presented to this body at this session, and I have wondered why at all of these meetings this subject has not received more attention. I suppose it is because it is a delicate subject to get before a body of men and discuss before them the question of ethics, how they should conduct themselves in practicing their profession. Nevertheless, as I have stated, I con-

sider it a very important question for the reason that it affects the public; it affects the good of our patients, and it affects the profession very much. I believe that the unethical conduct of physicians causes more heartaches among physicians than any other one thing. It should not be a proverbial saying that physicians can not agree. In communities where physicians are organized, where they respect the thoughts and opinions of their brethren in the profession, they get a good deal of pleasure out of their professional lives. It does not matter so much how hard their work is, nor does it matter so much how their patients treat them; but when our brother physicians treat us badly, it twitches us to our heart, and we do not soon get over it. When we feel that we have been castigated by one of our brother practitioners, if we will go to him as a gentlemean in the effort to explain in a cool, quiet, gentle way, if that physician is in error I believe he will meet you in the same spirit you approach him, and will make a retraction. Or you may find that you have listened to the remarks of some busybody, who is trying to get you estranged, and that it was not such a bad thing after all. Pardon me for relating a story in this connection.

There was a man in the church who felt that a sister had done him a wrong. He went to the preacher, and the preacher said, "Go to the sister and talk to her." "I can't do that," he said. The preacher insisted that he should go the next day and talk to the sister. Later the preacher saw him and asked if he had gone to the sister. No, he had not. He went on for three or four months in this way. Finally, the man got to thinking about it; he went into his closet and prayed over the matter, and when he got ready and got in the right kind of spirit, he decided that the sister had not done him so much wrong. He met

the preacher with a smile subsequently, and the preacher said, "Have you seen sister?" "No, sir. I began to think about it seriously, and decided she did not do me such a wrong." After all, gentlemen, it is a good deal of imagination.

Dr. Clark (in closing): I thank you for your kind reception of my paper. I am anxious to see in the reorganization of the Medical Association of Georgia more than the combining of the county medical societies; I am anxious to see a reorganization of the physicians of Georgia as a band of colleagues and brothers, working together for the benefit of mankind, and if what I have said will help a little bit toward the attainment of that end, I shall feel well repaid. (Applause.)

THE TREATMENT OF BRONCHO-PNEUMONIA.

By SAMUEL A. VISANSKA, M.D., Atlanta.

As the season is still upon us when the physicians will be called to treat numbers of such cases, would it not be well to discuss the very best methods of reducing the death rate of this dreadful disease, carrying off thousands of children each year, and which, next to the summer diarrheas, is most fatal? It might be termed the winter disease of infants. There are scarcely any two physicians who treat the disease alike; and this being the case, would it not be more beneficial to both patient and physician, if we could get together, and bring down the treatment to a practical, and not a theoretical basis? The theory of medicine is one thing; the practice another; blessed is the doctor who is practical.

Taking nature as the best physician, there is no disease which requires more intelligent assistance than that of broncho-pneumonia. The two vital organs are affected from the beginning, the lungs and heart, and often a severe enteritis occurs. The age of the child and its surroundings will have to be considered also. The first requisite to treat a case successfully is, as little as you think of it, to get the confidence of the family. Unless you do, there will be all kinds of suggestions from them as to the internal and external treatment. A good neighbor comes over with the very thing that cured her child, and the parents, intelligent ones, too, are willing to try it.

If you use one form of external application and the baby is not doing well, the mother is told of something a doctor used across the street, that patient happened to get well and you will often be influenced to use it. The text-books do not take up these points I mention, but experience, especially my first experience, has brought this to my mind: This meddlesome interference on the part of grandmother, parent and the neighbor has caused the death of many a little patient. My advice to every physician is to be master of the situation or step down and out. We all should realize that broncho-pneumonia is, in a great majority of cases, a secondary disease, and as a rule bronchitis is the primary cause. This may be either a simple bronchitis, or that which occurs as a part of infectious diseases, among which are measles, whooping-cough, diphtheria and membranous croup, influenza and possibly typhoid fever. Of course the specific cause of the inflammation is probably the pneumococcus of Frankel, but the staphylococcus and streptococcus pyogenes, the bacillus of Friedlander, or, as has been demonstrated, the tubercle bacillus may be the exciting cause. Of the predisposing causes of catarrhal pneumonia, age is the most important, and in children under three years of age it is the lobular form of pneumonia, which is found in a great majority of cases. It is especially most fatal in cases occurring under two years of age. With a knowledge of the morbid anatomy and symptoms in our minds, the question might be asked by what method can we lower the death rate?

1. We should be able to make a diagnosis and tell the dividing line between the pre-existing bronchial trouble and the extension into the terminal tubes and peribronchial tissue, as a number of errors of diagnosis have been made.

2. The predisposing cause should be borne in mind. My experience has taught me that pneumonia complicating whooping-cough requires the most active treatment, and for convenience we will divide the treatment into hygienic, external, and internal.

Hygienic.—The room should be large and have at least two windows and one with a fireplace is preferable. The temperature of the room should be kept at from 68 degrees to 70 degrees. The windows should be opened from above and below so as to allow plenty of fresh air into the room, as in mild cases that is our method of administering *oxygen.*

It is almost criminal to have your patient in a stuffy room with a big fire and every window and door closed. You need not allow a current of air to strike the child, as screens can be used. See that the bed of your little patient is made comfortable, and keep your patient on it most of the time, but the position of the child should be changed occasionally.

External.—By the external treatment, I mean the various applications which have been applied to the chest to bring about resolution. This external treatment has been and is yet as great a puzzle to me, as when I treated my first case. I wish I knew positively if they do good and which application is most beneficial, and I would be extremely grateful, if my fellow physicians could enlighten me on this subject. Many things, from the sweet-scented onion poultice to mother earth, has been used and the man who gets the cure with one preparation or the other naturally advises its use, but is it in any way due to the external application? One will use a mustard plaster, the flaxseed poultice, a combination of turpentine, lard and camphor, or fifty other combinations, and all claim good results, yet the death rate remains extremely high.

We often forget what the disease really is, and the changes which have taken place. In consultation, is where you will find in most cases the absurdity of the external application; by that I mean that if you are using one application, the consultant will often advise another, and yet there is no more reason for it than the first. The theory of the external treatment is to attract the blood from the lungs to the surface of the body. To do that you must use a method to attract the blood equally and not just over the area of the chest wall. Nothing has served me so well as the mustard, hot mustard bath, or mustard pack, and the child should remain in the bath until there is a pink glow over the body. It should then be wrapped in a blanket and placed in bed, where as a rule, it falls into a peaceful sleep; at the same time the high nervous tension is relieved, the child breathes easier, the pulse is not so rapid, the capillaries dilate, and the little patient often breaks out in a copious perspiration, carrying off the toxines, thereby throwing less work on the heart, kidneys and intestinal canal. These baths should be repeated as often as necessary. Returning to the applications used (manufactured or home-made), I believe they do little good unless there is a pleuritic condition, and the child is made more comfortable. I prefer then, the hot camphorated oil with mustard, applied anteriorly and posteriorly over the lung area by gentle massage; children enjoy being rubbed, and will often go to sleep while the rubbing is going on. If you wish a quick counter-irritant the mustard plaster will suffice, then if you like, a close fitting flannel undershirt, lined with cotton material, can be worn next to the skin. Nothing heavy should be allowed over the chest, as nature often brings into play all the auxiliary muscles of respiration so as to convey oxygen to the system. Then again, if you have

these thick and heavy applications applied, you can not make repeated examinations of the chest without disturbing your little patient. Even the bedclothes should be light.

Internal.—As we usually find a torpid liver and furred tongue in these cases, it is well to begin with small doses of calomel followed by oil, or a simple saline mixture. In not a few cases the gastro-intestinal symptoms are a grave complication. Most children swallow the mucus unless vomited up, therefore, keep the tract cleansed. The tympanites is often very troublesome, pushing the heart and lungs out of position, adding greatly to the discomfort of our little patient. The treatment then is the same as for gastro-enteritis.

For the cough, which is usually dry at first, the simplest and most palatable mixture is the best. I might write a number of different prescriptions, yet the one I give will usually answer.

℞ Arom. spt. ammonia ..... ℥ii
Vin Ipecac ..... ℥ii
Syr. Pruni Virg. ..... ℥vi
Syr. Tolu. ..... ℥iv
Aq. Anisi qs. ..... ℨiii

M sig. A teaspoonful every two hours to a child one to two years of age; or this one:

℞ Cit. potash ..... grs. xxiv
Vin Ipecac ..... ℥ii
Spt. mendererus ..... ℥vi
Syr. Tolu ..... ℥iv
Aqua qs ..... ℨiii

M sig. A teaspoonful every two or three hours. If the cough is quite troublesome add a few drops Tr. opii camph. or deod. tr. opium, according to the age of the child. Never order your anodine in the mixture as you might wish to increase or decrease the dose or leave it out entirely.

Stimulants.—In the mild cases very little stimulation will be necessary; if so, whiskey alone will suffice. It is

in the severe cases, where the pulse is so rapid you can scarcely count it, that will tax you to know what to do. Here whiskey, strychnine and my sheet anchor, tr. digitalis, should be used. For a child one year old I order 30 drops best rye whiskey every three hours and strychnine gr. 1-250 to gr. 1-200. Should the child show the effect of too much strychnine decrease the dose or leave it off for a while. Where the pulse is over 130 I use tr. digitalis, and so far have never had any ill effects. Tr. digitalis is a cardiac regulator. By its effect upon the cardiac ganglia and the muscle itself, it induces contraction, and strengthens the systole; by its effect on the vagi it prolongs the diastole. The result of this double action is that the diastole of the heart is lengthened so that more blood is allowed to enter the ventricles, while the systole is made stronger so as to impart more vigor to the flow of blood into the arterial system, and at the same time a rapid and irregular action of the heart is slowed and steadied. As digitoxin is the most active ingredient, and being insoluble in water and, therefore, precipitated by it, never order the tincture in combination, and give in a few drops of syrup so that it will be absorbed at once. No water should be allowed the patient for several minutes after swallowing. The dose is one to two drops every three hours for a child one year old. You must watch carefully the effect on the pulse and know when to leave off the digitalis. I have used adrenalin with good results, especially where there were signs of cerebral trouble.

Fever.—An ice cap to the head and sponging with either tepid or cool water is all I use to lower the temperature, and have never had to resort to other methods.

Nourishment.—Happy are the little ones who are breast-fed; they not only have a greater power of resistance, but there is less tendency to abdominal complica-

tions. Broth, beef tea, milk and egg albumen will constitute the principal diet list.

Oxygen.—Oxygen should be used at the beginning, if the disease complicates whooping-cough. Here you have the double cough to deal with, and as a rule, get cyanosis from the first. Even where the lung is greatly involved in other cases, it is a good idea to give oxygen early, and not wait for cyanosis.

405-406 Peters Building.

DISCUSSION ON DR. VISANSKA'S PAPER.

Dr. C. L. Williams, of Columbus: I think this subject is one of great importance. There is no disease I have to contend with that I dread more than broncho-pneumonia in children. In fact, I believe it is a rare thing in very young children to find the capillary bronchial tubes stopped up with inflammatory conditions, putting a burden upon the heart, and I have been convinced for a long time that the less remedies we use the better for the children.

As to external applications, I use mustard and counter-irritation in mild form; then cover the chest and keep it in that condition. Cough is sometimes so severe that we are compelled to use opium in some form. It has been my practice to use carbonate of ammonia. I make it pleasant for the patient. Then, I have another mixture of carbonate of ammonia, with camphorated opium or codein, and where the cough is severe I usually use carbonate of ammonia, with codein. If the cough is not persistent, I put the child on carbonate of ammonia. For the heart I occasionally use nitroglycerin. I was treating a case before I left home. The patient, a child, was five years of age. I used as much as the one-hundred and twentieth of a grain of strychnia every six hours. Respirations were about 65 to the minute, and the pulse was

160 or more. Respiration under this treatment came down to 40, and the pulse was very materially reduced.

The proper temperature of the room is very important. There ought to be a fire in the room, if necessary, with the windows lowered at the top, so that the temperature of the room should be kept continuously at from 68 to 70. The child I spoke of just now is improving. I went there one morning and found the temperature of the room down to 64. I told the parents they had neglected to notice the thermometer which I put in, and they acknowledged they had. The child's condition was worse. Breathing was worse. The fine subcrepitant rales were more exaggerated.

I regard the position of the child as very important. It should lie on its back and be kept so.

Dr. W. S. Kendrick, of Atlanta: There is hardly one within the sound of my voice but can testify that I am not a great giver of drugs. I am no authority on materia medica, and I am not a great drug-giver. I may be wrong, while my brethren of the opposite side may be right.

I have listened with some interest to Dr. Visanska's paper. It is a good one. As to the use of digitalis in acute febrile affections, I do not believe that digitalis in any of its forms (I do not condemn its use in toto) has any place in the treatment of any acute febrile affection. The great and brilliant results obtained from digitalis have been in chronic affections, where scarcely any fever existed. In typhoid fever in any of its stages, in acute broncho-pneumonia in children, or in acute lobar pneumonia, or any of the acute febrile affections, it has little place; but where we get the best results from its use is in the organic chronic affections of the heart, whatever that may be, depending upon whether it is secondary to

the kidneys, or to any organic affection of the heart. It energizes the heart. It lessens its number of beats. A heart beating probably one hundred times per minute can be brought down to seventy times per minute by the judicious use of digitalis.

Dr. J. W. Duncan, of Atlanta: I enjoyed the paper very much. It is a good paper. It is timely, and the subject has been well handled. But, as Dr. Kendrick remarked about digitalis, I do not give it where we have a high tension pulse, showing there is a contracted condition of the capillary circulation. Digitalis, if you give it in sufficiently large doses, will increase that trouble. If you want to lessen the arterial tension, give something else. I would rather give small doses of Norwood's tincture of veratrum than to give digitalis in that state. That is my practice in these cases of catarrhal pneumonia, broncho-pneumonia, or lobar pneumonia. When I first began to practice medicine they called it capillary bronchitis. I give a very small amount to a young child, say the sixteenth of a drop of Norwood's tincture. To older children I give more; I give from the eighth to the fourth of a drop of tincture of aconite. Those remedies are better than digitalis in the acute stage. I would rather risk giving them. When you have a case of high arterial tension, indicating that it is difficult for the average heart to force blood through the capillaries, and especially through the lungs, do not give large doses of digitalis. I consider two or three drops too much for a child. You increase the arterial tension; you bring the heart's action down, but at the same time increase the contraction of the capillaries.

As regards local applications to the chest, I generally find mustard, turpentine and lard in nearly all families.

I use them as local applications, and use them in equal parts. You might think it will blister the child; it will not. It will redden the skin, but it does not blister it. This may be used three or four times a day with good results.

Another thing which was not mentioned was the use of quinine. I have had cases I have treated for days without quinine, and usually without any noticeable improvement, yet after its use the patients would improve. To children one or two years old I would give a grain or more of the bisulphate of quinine, with one-twelfth to one-eighth of a grain of camphorated Dover's powder, and would get good results in a few hours.

As regards the heavier applications. If you find in examining a patient the first time you see him that he has pneumonia, or broncho-pneumonia, I see no objection to putting on a cotton jacket. The text-books of late years condemn this practice, on the ground that it interferes with the examination of the patient. I have seen fine results from the application of a cotton jacket, covered with oil silk, the chest being covered with a common cotton binder. Children will rest better.

Dr. C. M. Curtis, of College Park: I have found in twenty years' experience in general practice that there is one point that, I believe, has been overlooked by the gentlemen who have spoken. It occurs to me to be very important and that is, in a pneumonia patient, no matter what form of pneumonia the patient has, it is very essential to keep the room at an even and comfortable temperature, either winter or summer. In winter it will necessitate artificial heating, and more circulation of the atmosphere in summer than in the winter time. I generally try to keep the atmosphere of the sick-room as pure as possible through another room that is already heated.

This, with the nourishment of the patient, when it is needed, constitutes the principal part of my treatment. The less medication I give the better the patient gets along.

Dr. B. P. Oliveros, of Savannah: For controlling the cough in cases of pneumonia I have used with gratifying success glycerine, deodorized tincture of opium and a few drops of chloroform.

Dr. O. L. Holmes, of Covington: I find that if drugs are used by inunction in these cases we do not get the bad effects on the stomach as we do by administering by the mouth, incorporating them with lard, turpentine and mustard. I believe we get quicker results by inunction than by administration by the mouth.

Dr. Visanska (in closing): Of course, when a man reads a paper he can not bring out every point in regard to every method or agent he has used in his experience. He can only outline the general treatment he has used and leave it for the discussion to bring out a great many things that the reader of the paper leaves out.

As regards the use of carbonate of ammonia, while I have used it, I prefer the aromatic spirits of ammonia. I have more confidence in it than I have in carbonate of ammonia, as made up and sold by the average druggist. It is much more palatable and does not upset the stomach quite as much as carbonate of ammonia.

In regard to the use of tincture of digitalis, as I stated in my paper, we all differ about the use of drugs, and it is a good thing that we do so. One man is satisfied with his results from using certain drugs, while another is satisfied with using other drugs. I have obtained good results by the use of tincture of digitalis. It is used in New York in most of the hospitals, and they claim excellent results from it. Of course, we all know that tinc-

ture of digitalis is used in chronic heart affections and kidney affections with good results; at the same time, if we get good results from its use in some acute condition, I do not see any harm in using it. Unless we try these things, we will not improve our knowledge of therapeutics. To-day we are in the background as regards therapeutics and materia medica, and that is the reason why we are using every Tom, Dick and Harry's preparations, so-called pharmaceutical preparations. We must and should study materia medica and learn how to use these preparations and when to use them.

I was recently called in consultation in a case with a practitioner who was using tincture of digitalis in a mixture that contained water, and therefore he did not get any result. He did not get the result of its active principle. As long as I can get good results by using digitalis in such affections as I have referred to, I shall continue to do so. No man need use it unless he wants to.

THE GENERAL PRACTITIONER AS A FACTOR IN SURGERY.

By R. R. KIME, M.D., Atlanta.

The physician bears a threefold relation to surgery. The first and most important is the prevention of the necessity for surgery.

Secondly, the physician may be a causative factor in developing directly or indirectly conditions that require operative procedures.

Thirdly, the physician is often called upon to use his judgment and advise his patient either for or against operative procedures.

While the old-time family physician seems in a measure to be passing away, the new era demands a high-class, well qualified, general practitioner to act as a balance-wheel in the medical profession. Specialism reached its highest point in the past decade, and the profession now realizes that no one organ can be uniformly and successfully treated independently and separately from its relation to other parts of the body. The broad and well balanced specialist should have a good knowledge of general medicine, while the general practitioner should have some knowledge of all the specialties. His duty to his patrons demands that he should know when the services of a specialist would be of benefit to his patient; especially is this true in the line of surgical work.

Not only should he have some knowledge as to when

surgical work is necessary, but he should understand why, and to some extent what, caused the necessity.

To the conscientious physician it should be a matter of no little concern whether he has fully discharged his duty as to the prevention, and that he has not been a causative factor in producing conditions requiring surgical measures.

In this day and age preventive medicine is of much importance. So should it be with surgery. Preventive medicine and sanitary science deals mostly with communities and people collectively. Preventive surgery mostly with the individual, hence it is more of a personal equation between physician and patient.

Gonorrheal infection sociologically considered is one of the exceptions to this general rule, because of its general prevalence and so often leading to pathological changes that require operative measures for relief, especially from a gynecological standpoint.

Much could and should be done by the general practitioner in the prevention of the social vices which lead to such grave consequences. This is a grave responsibility and duty neglected by many physicians with serious results, causing much suffering, misery and sorrow in many households. Here it is much surgery is developed from lack of duty and improved opportunities by the general practitioner, to say nothing of the improperly cured or treated cases.

A physician's duty is but half done in preventing disease, relieving suffering and making a living. He owes a higher, nobler and broader duty to humanity in preventing crime, vice and moral disease. This duty he owes to humanity as a slight compensation for that which he and

his family enjoys as a result of the labors and sacrifices of the noble and good that have gone on before.

When the medical profession fully realizes its duty along these lines then every medical college will have a chair on medical sociology and make it one of the most important branches in its curriculum. In it will be included preventive surgery as well as preventive medicine.

In order to be brief and to the point, we will only mention disconnectedly a few of the conditions in which the physician may prevent or cause surgery and conclude with some instances in which the physician should refer cases to the surgeon.

In obstetric practice most physicians recognize the necessity for clean aseptic work, yet many neglect the little details necessary to prevent at last a mild infection that frequently leaves behind chronic trouble requiring the services of a gynecologist.

Thorough disinfection of the hands in all cases, the wearing of rubber gloves when in doubt, immediate aseptic repair of perineum, be it slight, with aseptic care of patient during puerperium, is essential to prevent surgical work later.

If infection occurs, thorough irrigation of uterine cavity and free drainage—not the curette—are essential if the generative organs are to be preserved in tact for future physiological functions.

In abortions uterine cavity should be thoroughly emptied and disinfected to prevent disease of adnexa. In every case of labor or abortion after delivery during the puerperium patient should assume the exaggerated Sim's position on right or left side, twelve to eighteen hours out of the twenty-four, and if patient have retro-displacement of

uterus at end of third week, it should be corrected. Appropriate treatment at this time with hot douches and tampons, followed later by properly adapted and adjusted pessaries, will correct fifty to seventy-five per cent. of the cases without surgical operation.

Introduction of uterine sound and intra-uterine treatment in the office and curetting uterus without aseptic measures, has done much damage. Pelvic massage and trachelorraphy in pus cases has developed surgery.

During pregnancy many cases of kidney lesion develop and cause operative work at delivery and afterwards directly or indirectly that might have been prevented by judicious treatment which would have been indicated by use of the microscope at the proper time.

I say microscope, because the qualitative chemical examination of the urine, as usually made, is of but little value in many of these cases, and without the use of the microscope you will be misled as to the true condition of the patient.

The direct and ultimate results of the let-alone, do-nothing, constipating plan of treating typhoid fever tends to the development of surgery. To the rational mind it favors increased germ development, and toxines in alimentary canal, adding autointoxication, toxemia, distention of abdomen, irritation from accumulating and hardened feces, all depress vital powers of patient, check secretions, increase delirium, pervert nutrition and favor directly perforation and hemorrhage, later complications of kidneys, appendix, liver, joints, and last, but not least, infection of gall ducts, some of which at times require surgical intervention for relief which might have been prevented by a more rational plan of treatment.

Chronic constipation, indigestion, distention of colon

tend to produce complications with appendix, which can often be prevented by judicious treatment, dieting and regulating habits of patient.

In cases of acute appendicitis too active catharsis and food by the stomach often produce serious surgical complications which might be avoided. Even in severe cases, with perforations and other complications withholding food from stomach, lavage, if necessary, using concentrated nourishment by rectum, with complete quiet, will tide most cases over to a comparatively safe period for operation. The general practitioner in these, as well as in many other conditions, must be competent to decide when operation will be most judicious and for the best interest of his patient, else have a surgeon associated with him in the case that is competent to decide.

In typhoid fever, appendicitis, colitis and even indigestion, emptying alimentary canal at first by the least irritating method, give such remedies as tend to disinfect the intestinal tract, aiding digestion and assimilation, will prevent many serious complications and much surgery. Some one, no doubt, will say it is impossible to disinfect the alimentary canal; so is it impossible for the surgeon to disinfect his hands or the field of operation, but he who fails to make an effort to approximately do so is criminally negligent.

In nearly all cases of ectopic pregnancy, ovarian cysts and malignant disease, operative measures are indicated, and the sooner the better, especially in cancerous conditions.

It is here the general practitioner so often makes the fatal mistake of procrastinating and waiting to be positive of malignancy before advising immediate operation.

In all cases where there is even the suspicion of malig-

nancy the case should be sent at once, without delay, to the surgeon or to one specially qualified to handle the organ or part involved. The physician who fails to so instruct his patient neglects his duty, and in some instances is indirectly responsible for the death of his patient.

Every physician should be conversant with the late developments in diseases of the stomach, gall bladder and ducts, movable kidney, etc., so as to be in a position at least to advise his patient to seek relief at a time when it will be of most benefit, and not when it is too late to prevent death.

There is a border-line between surgery and medicine in which there is a demand for a closer association of the surgeon and physician.

The physician does not see enough of the pathological conditions disclosed by surgery, while the surgeon often does not see enough of the primary conditions that lead to the necessity for surgery, and to fully appreciate the responsible position in which the physician is placed.

Here, it is manifest, the surgeon needs a broad foundation and knowledge of general medicine, while the physician needs to understand more fully the primal causes that lead to the demand for surgery as well as the results, direct and remote, that can be attained by surgical measures. With this knowledge on the part of both, and a closer association in work, then "preventive surgery" will be elevated to a higher point than it has yet attained.

To secure the best results, and place surgery and medicine on a higher scientific basis, the work of the physician and surgeon should be more closely associated and combined with that of the anatomist, physiologist and pathologist.

REPORT OF A CASE OF ADDISON'S DISEASE.

By WM. CLIFTON LYLE, M.D., Augusta.

My reason for presenting this paper is the comparative rarity of Addison's disease in this section of the country, and some special points in this particular case that came to light during a rather close observation extending over a period of nearly two years.

This disease is probably the most important of those that produce a discoloration of the skin, not from that symptom alone, but from the train of symptoms that accompany and precede it, and from the peculiar pathological condition that causes it. This importance is further increased as a result of our lack of knowledge of the manner in which disorders of the suprarenals produce this characteristic discoloration.

It is more than probable that all the functions of these bodies have not yet been discovered, but we may presume upon at least three: 1st. The secretion of a material necessary to proper blood production. 2d. Destruction of hemoglobin. 3d. Intimate association with the sympathetic nervous system. Considering these three functions as established, we may more readily understand how the "bronzing" as well as all other of the varied symptoms of this disease occur. It might occur as a result of the circulation of the products of the disintegration of hemoglobin. Brown-Sequard claimed that the pigment consequent upon this disintegration was destroyed in the suprarenal

capsules. If this is the case any disease affecting them sufficiently to suspend their functions should be followed by increased pigmentation.

Likewise pyrocatechin, normally found in the medulla of the suprarenal glands, becomes brown upon exposure to air or alkaline tissue. In health this pyrocatechin is eliminated through the agency of the sympathetic ganglion cells; but in Addison's disease is converted into a poison in the circulation, and aids in producing the autointoxication.

This method of elimination by nervous action leads us to consider the effect of the sympathetic system upon the chromatophorous cells, which as in the chameleon, are under direct nervous control, and these cells yield an excess of pigment of the malpigian layer, under certain condition of nervous disorder.

Before the "bronzing" is distinctly noticeable, there are always other symptoms of more or less grave import: breathlessness on exertion, rapid feeble pulse, weak heart sounds, epigastric pain; later faintness, giddiness and a tendency to fall when rising suddenly. Loss of appetite, nausea and probable vomiting occurs, though the body weight is usually maintained. These symptoms are, in my opinion, due to poisoning by bodies (probably leucomaines) the result of the destruction of red corpuscles and therefore is a form of autointoxication. These symptoms, either wholly or in part, occur as a result of any of the diseases to which the suprarenal is subject. viz.: tuberculosis with fibrocaseous and calcareous degeneration, cystic degeneration, fatty degeneration, simple atrophy, chronic interstitial inflammation which may lead to atrophy, malignant disease including carcinoma and sarcoma, hemorrhagic extravasations and embolism. The same symptoms may result from any one of these

morbid states, and there is no distinctive symptom of any one.

My notes on the case referred to are as follows:

W. U. Age 55. Married. Farmer. Consulted me November 4th, 1903, complaining of great weakness, anorexia, slight swelling of feet, occasional abdominal pain.

HISTORY.

The patient stated that he had been ill for ten months, and all his symptoms were growing progressively worse.

CONDITION ON EXAMINATION.

Patient was found to be fairly well covered with fat. Pulse very soft and small. Heart sounds very faint. Mucous membranes pale. Sclerotics clear and white. Appetite fairly good. Tongue foul in center. The pain was not aggravated by taking food. No tenderness on pressure over epigastric. Inasmuch as patient had to catch an early train no blood examination was made, and while pulse somewhat contraindicated, the history and apparent symptoms caused me to make a hurried provisional diagnosis of pernicious anemia. A course of arsenic, iron and bone marrow was directed and patient instructed to call again in two weeks.

Did not see him again until February 28, 1904. Condition practically unchanged. Gain of five pounds in weight. Intermittent diarrhea.

As patient was hurriedly passing through the city, and was seen at station, no blood examination was made at this time. He was directed to take digitalis, additional to other treatment, as the swelling of feet continued, although there was no puffiness of eyelids even though he had taken large doses of arsenic for four months, with monthly intermissions of one week each.

Three weeks later he reported at my office prepared to remain under observation for a week.

His condition at that time, March 20th, was as follows: Body weight maintained; pulse 92, very weak; heart sounds faint; appetite capricious; epigastric pain; diarrhea; feet swollen; sclerotics clear; mucous membranes, pale; dark lines at juncture of mucous membrane of lips with skin; several dark spots on tongue; skin, wherever exposed, decidedly pigmented; linea alba, scrotum and nipples very dark, lunulæ of fingernails and the palms of hands very pale, but with dark lines in creases of palms.

Chemical analysis showed no free HCl in stomach, which might indicate cancer, but no tumor was made out, or special tenderness elicited, by pressure over region of pain.

Uranalysis negative, special search revealed no bile, to account for pigmentation.

Blood examination showed 3,500,000 reds; hemoglobin 75 per cent. Poikilocytes present but no nucleated reds. Hemophilia was present to the extent, that when the ear lobe was punctured it was half hour before bleeding ceased.

DIAGNOSIS.

A diagnosis of Addison's disease was made.

TREATMENT AND SUBSEQUENT PROGRESS OF CASE.

Owing to a recent disappointment, in its use in a similar case, no suprarenal preparation was used. Strychnine was ordered, in addition to previous treatment.

Patient reported monthly for four months. No improvement. Progressive weakening. Anasarca more pronounced.

August, 1904, prescribed superarenal, gr. 3 t.i.d., and sent patient home with instructions not to call again, un-

less he improved. I feared he would collapse during some of his railroad rides of fifty miles to see me.

A month later, a letter from him stated that he was improving, and I advised him to continue his treatment. Two months later he came to see me, so bronzed that one would readily mistake him for a very dark mulatto, but physically improved. I ordered his suprerenal increased to gr. 5, which he continued to take until May, 1905. During this time his skin discoloration did not perceptibly grow worse, but it certainly did not improve as his general condition did.

Patient was able to resume his ordinary avocation of overlooking his farm work, and in May he declared himself cured, although still almost as brown as a negro. Contrary to my earnest advice he discontinued treatment shortly afterward, and his business requiring, he frequently took long drives of thirty and forty miles across country.

This he continued to do until August 15th, when he was caught in a heavy rain and drenched to the skin. He kept on his wet clothes until night and the following afternoon was attacked with faintness and was unconscious for several hours. A nearby physician accompanied him, a distance of forty-five miles, to my office the next day. Although accompanied by this physician, his discoloration was so pronounced that the quarantine officer supposing he had yellow fever, refused to allow him to proceed, until he got telegraphic communication with me.

I found him practically in a state of collapse, requiring the injection of heroic doses of strychnine. His anemic paleness had disappeared. Urine contained acetone. Temperature, subnormal; intermittent profuse bromidrosis; frequent epileptiform convulsions. Died August 17th.

POST-MORTEM.

Only a somewhat superficial post-mortem examination was allowed. The stomach was normal, the liver apparently so, and both suprarenal glands completely atrophied.

An examination of the various ganglia and branches, of the sympathetic system, liable to be involved, could not be made.

SPECIAL POINTS.

The special points in this case were the freedom of the sclerotics and roots of nails from pigment. The dark lines at juncture of skin and mucous membrane of lips and in creases of palms. The hemophilia, acetonuria, the atrophy of the suprarenals, uncommon in persons of that age, and the decided improvement consequent upon the administration of suprarenal substance.

One point is interesting and very important. It shows that in this disease, even when marked improvement takes place, the patient's life, owing to the abolished function of the suprarenal glands, is extremely precarious, and all patients who have greatly improved or apparently recovered should lead inactive lives. They should be warned that they are not cured, that the morbid conditions are still present and that any overexertion or undue exposure liable to depress the heart may be attended with grave danger.

Concerning etiology, etc., I desire to give full credit to recent articles in the *British Medical Journal,* by Byrom Bramwell, M.D., and William Tibbles, F. R. C. P., from which I have extracted freely.

DISCUSSION ON DR. LYLE'S PAPER.

Dr. C. L. Williams, of Columbus: I recall the case of a police officer who came to me for treatment. The case pursued the same course as that of Dr. Lyle's. I assured

his wife that he had an incurable disease, and probably would live two or three years. They continued him on the police force. Finally he was put into a wagon, as he was so weak that he could not perform the duties of a police officer, and fell into the hands of another physician for a short time, who said the case was curable; that he had been in this condition himself. He gave the man calomel and other medicines, with some little improvement, as the man thought, but when I saw him on the street occasionally he was gradually becoming more bronze in appearance, and he lived about three years and died in collapse, having been perfectly worn out.

Dr. E. B. Block, of Atlanta: I have been very much interested in Dr. Lyle's paper. It is worthy of careful study. I wish to say that lesions have not been found in the suprarenal glands in all cases of Addison's disease. We know that the sympathetic nervous system has a decided influence over the pigmentation of the skin, and in many cases of Addison's disease lesions have been found in the semilunar ganglia.

I have personally observed a case of pigmentation of the skin confined strictly to the distribution of the cervical sympathetic, that is, taking in exactly one-half of the face, upper portion of the chest on one side and the right arm. This was confined to the exact distribution of the cervical sympathetic, and I believe the sympathetic nervous system has a decided control over pigmentation. It is probable that the disease of the semilunar ganglia has had its effect upon Addison's disease by influence upon the suprarenal gland. Everybody is uniform in the belief that the suprarenal glands are associated intimately with Addison's disease. A very common lesion of the suprarenals is tuberculosis, of which I have seen several cases.

The first case, to my knowledge, that was treated with the suprarenal substance was one I treated in 1895. I made glycerine extract from a pig's adrenal glands and gave it to a young woman, twenty-one years of age, but she died in about three weeks after this treatment was begun. There was really no improvement from the administration of suprarenal gland.

Since suprarenalin has been put on the market I have seen several cases that were treated by the refined products, without any apparent benefit. Of course, the stimulating effect of adrenalin is of some value, as it tends to overcome the extreme asthenia, which is the most marked symptom of this disease.

AN UNUSUAL COMPLICATION FOLLOWING TYPHOID FEVER; REPORT OF CASE.

By J. E. SOMMERFIELD, M.D., Atlanta.

Abscess of the liver is seen only occasionally in this section of the country, but when occurring as a complication of typhoid fever, it is exceedingly rare, and for that reason I am sure that the report of the following case will be of interest to the members of this Association.

A. S., male, white, age thirty-nine; family history: Both parents living and in good health; two of his brothers have had severe attacks of typhoid fever in recent years. Personal history: He has always enjoyed the best of health until eight years ago, when he had a chronic diarrhea of such severity that he was unable to attend to his business for nearly three years. During the past five years, however, his health has been good and he has experienced no bowel trouble.

He was first seen on August 20, 1905, when he felt badly for at least two weeks, although he did not take to his bed. On examination, the following symptoms were noted:

Temperature, 102.8° F.; pulse, 94; headache, tongue dry and furred, a slight cough, abdomen somewhat tympanitic, tenderness in the right iliac region, five or six rose-colored spots on the abdomen, constipation. Diagnosis, typhoid fever.

To confirm the diagnosis, Russo's test was used. This test has been suggested as a substitute for Ehrlich's diazo reaction. It is much simpler and seems to be equally reliable. As it may be unfamiliar to some of you, a description of the test may not be out of place here.

In typhoid fever it affords more information than the diazo test, as it indicates the exact phase of the disease. The reagent used is a 1-1000 aqueous solution of methylene blue. To a drachm of urine in a test tube, add four drops of the methylene blue solution, and if the reaction is positive, the fluid turns to a mint or emerald green color. A light green or bluish green represents a negative reaction. This reaction can be seen as early as the second or third day of the disease. As the fever reaches its height the dark green color becomes more marked, gradually turning to a light green, and finally a blue as convalescence is established or the emerald color persists until death. The reaction was positive in eleven out of twelve cases seen by me.

To return to the patient. On the twentieth day of treatment, the temperature returned to the normal and remained so for six days, when a relapse occurred which lasted two weeks. Just about this time he complained of a dull pain in the region of the liver, but a careful examination showed no enlargement. In the course of four or five days, the pain became quite intense, the temperature was normal each morning, but at night rose to 103, followed by a profuse perspiration. Gradually an enlargement of the liver was noticed with a marked bulging of the intercostal spaces. Abscess of the liver was diagnosed and Dr. H. F. Harris called in consultation and the diagnosis confirmed by him. On aspiration pus was found. It was examined microscopically by Dr. Harris

but with a negative result. Immediate operation was advised and on the following day Dr. F. W. McRae made an incision in the ninth intercostal space and a large quantity of pus was evacuated. No rib resected. The cavity was not irrigated, but large drainage tubes inserted. For several days the patient was in a critical condition, then rallied, and in a short time made a complete recovery. At the present time he is in the best of health and weighs more than ever before.

16 mt

IS THERE A CONTINUED FEVER OTHER THAN MALARIAL OR TYPHOID?

By J. W. PALMER, M.D., Ailey.

So much has been said and written on this subject, no doubt a great many of you feel that it is threadbare; but the fact is, the last word has not been said, nor will be for some time.

I have nothing new to add to the subject, and will not speak of it from a pathological or etiological standpoint, but from a bedside study.

The Georgia State Board of Health, having decided to locate a station in the southern part of the State to investigate and see if they could discover what this *third fever* was, and I, having an unusual amount of continued fever in my practice for the past eight months, have felt that I might provoke a discussion of the subject, if nothing more.

What is fever? We mean by fever an abnormal elevation of the temperature of the body with more or less pronounced functional derangement of all the organs of the body, lasting for some time, or repeated at certain intervals, and not produced by external heat or violent muscular exercise. This abnormal elevation of temperature is supposed to be caused either by direct action of micro-organisms upon the nervous centers, to which they are carried by the blood, or by the action of a poison, which they develop in the body. Wood claims that the inhibitory center is so depressed and benumbed by these or-

ganisms that it does not exert its normal influence upon the system, and, consequently, tissue change goes on at a rate which results in more heat than normal; at the same time, the vasomotor and other heat dissipation centers are so benumbed by them that they are not called into action by their normal stimulus.

Fever is classified as continued, remittent and intermittent, according to the character of the temperature range in either case.

Now, in regard to there being a continued fever other than typhoid or malarial, I don't believe there is. My knowledge of the subject, based on my experience with continued fever, and from what I have read on the subject, forces me to represent the negative side of the question.

Since last June I have tabulated only forty-eight cases of continued fever, of which thirty-six were typhoid and the remainder were malarial. I kept close tab with all these cases, and not in a single instance did I not satisfy myself as to the fact that it was typhoid or malarial, and not a new fever.

From a clinical standpoint, I believe all these questioned cases of continued fever are a variety of mild, uncomplicated cases of typhoid fever, except occasionally it is malarial. I live near malarial districts, and I have noticed that this continued fever seldom occurs much in localities where remittent fever prevails. In my tabulated typhoid cases there were a few families through which the fever went, and scarcely any of the members escaped. Some members of these families had typical cases of typhoid, while the majority had mild atypical cases, affording me a good opportunity to study these atypical cases of typhoid, which I could exclude from malarial or some unknown continued fever.

I will mention a few of these cases of atypical typhoid that occurred in families where some of the members of the family preceded them with malignant cases of typhoid.

Case No. 1.—Boy, twelve years old, white, had a continued fever for twenty-three days, ranging from 100 to 103½ degrees, with no symptoms whatever of typhoid fever, except the rose-colored spots on the abdomen. Had I seen this boy first in the family, and those rose-colored spots absent, I would have been inclined to call it malarial, or this unknown fever.

Case No. 2.—White, age fifty years, female; ran temperature from 100 to 102½ degrees for only fourteen days, but seemed very sick during this period, and especially suffered from severe pain in hepatic region; had no symptoms of typhoid, other than continued fever. Quinine had no effect, and malarial plasmodium in the blood was found wanting. Had I seen this case elsewhere I would not have called it typhoid fever.

Case No. 3.—Colored boy, age sixteen years; came to my office apparently very sick to be out; had temperature 101½ degrees, feeble pulse and a severe bronchial cough. I could not tell at that time whether he had consumption, malarial or typhoid fever, but, giving a history of being sick only ten days, and having a sister who had been down for two months with fever, I placed him on typhoid treatment. This boy never went to bed, but in ten more days was able to do light work. I later treated four more members of the family for typhoid fever. Had it not been for the typhoid history in the family, I would have never known for certain that this boy had typhoid fever.

I could report several more cases similar to these, but will report a few cases that occurred sporadically that were proved typhoid by complications.

Case No. 4.—Woman, white, age twenty-five years, married, had two children. Had smallpox eighteen months prior; had convulsions at birth of last child, ten months ago. Also had psoriasis. When I saw her she had continued fever, with no symptoms of typhoid whatever; temperature ranging from 100 to 102 degrees. Her symptoms were so mild I could not keep her in bed. On the twentieth day she began to have intestinal hemorrhages, and continued until the twenty-third day, when she died.

Case No. 5.—Colored man, age twenty-five years; came to my office with continued fever, and other symptoms of malarial. Other members of the family had done likewise, and, with malarial treatment, fever had yielded in few days. I placed this case on similar treatment and told him to go to bed, and if not better in few days to send for me. I heard nothing more, until eight days later he returned to my office, saying he was better, but not well. I then saw he had something more than malarial, and told him to stay in bed, and I saw him every day for a week, at the end of which, during my absence, he had a fatal intestinal hemorrhage. This case never showed any symptoms of typhoid, only by exclusion, as quinine had no effect, and I could not find any malarial plasmodium in the blood.

Case No. 6.—Woman, white, married, age twenty-two years, one child; had a continued fever for twenty-eight days, with temperature ranging from 101 to 103 degrees, with no symptoms of typhoid. I was treating this case for autumnal malarial, as it is claimed that quinine has no effect on this form of malarial, and it is usually very difficult to find the malaria plasmodium in the blood. After the twenty-eighth day this case began to

have repeated, profuse intestinal hemorrhages for three days, after which she made an uneventful recovery.

I could report other similar cases, but this sufficeth to show had it not been for the previous history in the first cases, and the typhoid complications in the last, I would never have felt fully satisfied as to the kind of fever I was dealing with, but would have been inclined to believe it malarial, or this unknown *third fever* in question. Hence, this leads me to believe that all these cases thought to be a *third fever,* when brought down to a correct diagnosis, will be proven typhoid. These last cases I reported should also impress us with the importance of having all suspected cases of typhoid to go to bed at once, because I believe had these cases staid in bed from beginning of fever they would now be living.

When this continued fever long ago was called typho-malarial, it was thought they then had a *third fever,* and even now, when we are doubtful about our diagnosis, as a catch-all, we call it typho-malarial, so whichever one it turns out to be, we will say that element predominated, and make ourselves safe. There is no such fever as a combination of typhoid and malarial. Professor Osler claims the only way to have both of these fevers at the same time is, while suffering with malarial you may at the same time have the typhoid bacilli in your system, which may begin to develop typhoid while you still have some malarial; that they are two distinct germs, one bearing no relation to the other whatever, and there is no such thing as these germs uniting and producing a *third fever* known as typho-malarial. There is no such disease as typho-malarial fever, because the cases called typho-malarial are nothing but simple uncomplicated cases of typhoid fever of a mild form; they are only a clinical variety of typhoid fever, because it must be remembered that uncomplicated ty-

phoid often presents a decidedly remittent character at the outset of the attack. The non-recognition of this fact leads to frequent mistakes in diagnosis, and that many cases of simple typhoid, and especially its mild cases, are imperfectly classified under the headings, malarial, typho-malarial and remittent fever. In these cases we usually make our diagnosis at an early period in the progress of the disease, before the distinctive characters of typhoid fever have been developed, and at a time when the fever is very often remittent in its character.

We find in the first medical volume of the Medical and Surgical History of the War of Rebellion that continued fever was changed to typho-malarial, and later the Board of Medical Officers recommended change in nomenclature from typho-malarial to typhoid.

Professor Osler, in one of his New York addresses, in speaking of the *third fever,* where in New York they called it malarial to keep from speaking of it as typhoid fever, he called it *New York malarial,* which is one of his synonyms of typhoid.

Dr. Wood, in his "Practice of Medicine" (ninth edition), says: "In some instances typhoid fever presents no other symptoms than those of moderate fever. The tongue remains soft, moist and whitish throughout; there is no vomiting, no considerable nervous disorder, no great prostration; in fine, none of these peculiar symptoms commonly dominated typhoid. The disease runs its course in two or three weeks, sometimes in even less time, and then subsides spontaneously, leaving no unpleasant effects."

This fever occurs mostly in autumn and winter months, and can be traced usually to unsanitary conditions. All the fatal cases of this class, where post-mortems were held, were found to be typhoid fever. Where remittent and

intermittent fevers are prevalent you don't find much of this type of fever, hence this all goes to prove there is no *third fever.*

In handling these cases of continued fever, we should be very careful to make a correct diagnosis. Before we entertain the idea of a *new fever,* we must use all means and methods at our disposal to exclude malarial and typhoid, and especially typhoid. To exclude malarial, first cinchonize our patient; second, make microscopical examinations of the blood in search of the malarial plasmodium, and, if results negative, you may feel safe in excluding malarial, unless it might be the autumnal malarial, and you may further exclude by trying the typhoid test, which, if affirmed, certainly excludes malarial. As soon as we have excluded malarial, and doubt typhoid fever, we should at once send Dr. Harris, of Atlanta, a specimen of blood, requesting him to wire us the results. The best means of examining the blood at home is with an apparatus gotten out by Parke-Davis & Co. called agglutometer. I consider it a very safe and reliable test, and recommend it to all those who have not tried it. There is full directions with it, which is too lengthy to mention here.

I think that is one of the wisest movements of the State Health Board, when they suggested a laboratory stationed in Southwest Georgia to investigate this continued fever. It is the duty of the doctors of the State to urge its establishment at once. I believe it will help to settle this question of a *third fever,* and cause more of us to make a correct diagnosis of typhoid fever.

In short, I say when quinine will have no effect on this fever and you can't find any malarial "bugs" in the blood, it should be treated as a case of typhoid fever, and we should continue to do this until those who maintain the

existence of a distinct form of continued fever discover its cause, define its character and give to it a specific name.

If, as some may claim, there is a form of continued fever widely prevalent, which is influenced by the same predisposing causes, but is distinct from typhoid or malarial fever, the burden of proof is upon them, and we should never accept it until proven.

DISCUSSION ON DRS. SOMMERFIELD'S AND PALMER'S PAPERS.

Dr. H. McHatton, of Macon: The question of a so-called simple continued fever has been up before this Association in various disguises since I became a member twenty-three years ago. I want to agree absolutely with the paper that has been read. I have spent much time in trying to find a simple continued fever. When we have a patient who is not malarial, where we do not have any tubercular condition that would cause it, where it is not caused by syphilis, you may make up your mind that in this country it is typhoid fever. I talked over this question with Dr. Welch twenty years ago, because the older practitioners claimed that there was a simple continued fever which was neither malarial nor typhoid. Dr. Welch asked me for some pathological specimens in order to make an investigation. I was never able to get such specimens. When the patients began to get worse the symptoms were those of typhoid. Patients with this simple continued fever rarely or never die. Let us take a group of cases I had some ten or twelve years ago. One case lasted ten days, one lasted fourteen or fifteen days, one lasted about three months, while another one died at about the eighth week. Either one of three or four of these cases would have been taken for a simple continued fever. We have a practitioner in Macon who recognized

a case as one of simple continued fever last summer and treated the case as such for four weeks, after which the case was turned over to me. The patient had two distinct relapses with hemorrhage before he got through. If we go on with these cases of simple continued fever, the first thing we have is a hemorrhage or something that is absolutely pathognomonic of a typhoid condition. So far as we are able to discover any proof, I think we can safely say that we have no such thing as a simple continued fever. The sooner we recognize this, and the sooner we treat the patient as a typhoid fever patient, the more will we lessen the mortality from typhoid fever in this State.

Dr. J. D. Herrman, of Eastman: I treated a young German two years ago for a supposed case of continued fever. It was an uncomplicated case. He recovered in about three weeks. Four months afterwards he developed an abscess on the outer aspect of the thigh. He was operated on by myself, and I found on making an incision that he had necrosed bone. I did the usual operation. He recovered in time, and in six months thereafter developed the same affection. He was then sent to Atlanta, where he was operated on by Dr. Nicolson. His recovery was prompt. Six months afterwards a similar abscess appeared, and he became very much discouraged. He went to Europe, and while there consulted two or three physicians, one of whom lived in Vienna. He was carried to one of the hospitals in Vienna and operated on. His brother wrote me a letter, asking whether he had ever had typhoid fever. I told him that he had a fever which lasted three or four weeks; that I could not pronounce it typhoid fever at that time. They were unable to find the typhoid bacillus in the cancellated tissue of the bone. He

recovered from the operation and is now well, so far as I know.

Dr. W. S. Kendrick, of Atlanta: With the experience I have had as a teacher of this disease and clinically at the bedside, I agree with the author of the paper and with the remarks made by Dr. McHatton. I do not believe, outside of thermic fevers, that there are but two great divisions of fevers, and those divisions are the ones that have been mentioned, malarial fever and typhoid. The typhoid can be determined by the diagnostic symptoms of enlargment of the spleen, the rose-colored spots, the gradations of fever, its ascent and descent, as a rule. Of course, there are many exceptions. Whatever course they pursue, I believe these so-called continued fevers are practically all of them typhoid. We have to differentiate between malarial fever and typhoid fever, and, as a rule, the diagnosis can be made in these cases without very great difficulty. One of the greatest difficulties in arriving at a correct diagnosis in regard to typhoid fever as compared with any other disease is to differentiate it, for instance, from acute miliary tuberculosis, as they run parallel with each other. Miliary tuberculosis, however, is almost universally fatal. The symptoms, the clinical evidence, the appearance of the patient, in a large measure are exactly the same as in typhoid fever, and there is no question in my mind but that many of us have lost cases from acute miliary tuberculosis which were diagnosed by us as cases of typhoid fever. We have intestinal hemorrhage and other symptoms which are similar to those seen in some cases of typhoid. As has been expressed by the author of the paper and by Dr. McHatton, there are many grades of typhoid fever. Some cases terminate in ten or twelve days in resolution. Instead of having intestinal ulceration and sloughing, we have reso-

lution taking place at a certain time, and consequently the patient is getting well. At that time those who advocate the eliminative treatment say that they are able to cure the disease inside of eight or ten days, but I think those are the cases that get well practically without any treatment. They reach the point in ten or twelve days in which ulceration or necrosis and ulceration would not take place, and consequently we have early recovery. If they did take place, they would do so in Peyer's patches to a small degree. I believe all of these cases, if they are not malarial, in which recovery takes place, in which we have a subsidence of the acute febrile condition, even at the end of ten, twelve or fourteen days, are mild cases of typhoid fever in which intestinal ulceration does not take place, or if it take place it does so to a limited degree. I believe and have always believed, from the pathology of the disease and from the general symptoms, that typhoid fever, like acute lobar pneumonia, if not taken within the first twenty-four or forty-eight hours of its incipiency, can not be cut short a single day by any kind of treatment.

Dr. C. M. Curtis, of College Park: I have enjoyed this discussion on typhoid and malarial fevers very much, and I want to endorse every word that has been said in regard to those diseases, with the possible exception that I may have misunderstood Dr. Kendrick when he said that there are many different varieties of typhoid fever.

Dr. Kendrick: I think I said there is a great deal of difference in the grade of fever in these cases.

Dr. E. C. Thrash, of Atlanta: After hearing Dr. Sommerfield's paper, it reminded me of a case I saw in consultation not long ago. The patient was a child, ten years of age, whose elder brother had a long attack of typhoid fever, who was stricken down and had apparently a simple form of fever for some three or four weeks, when a

general periostitis set up. We first made an incision over the clavicle and let out quite a quantity of pus, then there were two incisions made along the radius and a good deal of pus was let out from there, and later on three incisions around the knee were made and two or three incisions up and down the tibia. I suppose there was a quart of pus removed from various parts of the body as the result of a general suppurative periostitis. Acute osteomyelitis was set up in the forearm and the bone was dead for about four inches, which finally sloughed out. We could not do a radical operation at this time on account of the lowered vitality of the child. A complete solution of continuity of the tibia took place three or four inches below the knee from this acute osteomyelitis. We made an incision around the knee of all tissue that was not already necrosed, and depended upon these incisions to let out the pus. Clamps were applied and the wounds were dressed very rapidly under gas anesthesia. The child was left in this condition until it could recuperate, so that an amputation could be made. The necrosis around this joint continued. We treated the case week after week, and finally the child got into a condition so that the necrosed bone could be removed from the arm, and later on we amputated the leg at the lower third, and apparently got along fairly well, but there was some infection of the bone higher up than we had amputated, and later we made a resection of the bone above the site of amputation. We removed something like four or five inches of bone of the forearm, and amputated the leg a third time. The child has now made a complete recovery, is perfectly strong, and has gained twenty or thirty pounds in the last twelve months.

Dr. Louis H. Jones, of Atlanta: If I did not misun-

derstand Dr. Kendrick, he considered typhoid fever like acute lobar pneumonia, as not capable of being aborted unless it was nipped in the bud in the first twenty-four hours. How will you abort it at all?

Dr. Kendrick: I had reference to pneumonia. Not to typhoid fever.

Dr. J. W. Duncan, of Atlanta: I enjoyed this paper very much. It is a fine paper. It is timely. For several years there has been quite a difference of opinion about typhoid fever. Six years ago this month I attended the State Medical Association of Tennessee, when this question came up there and Dr. Cowan, whom many of you know, a very excellent man in Tennessee, asserted on the floor that he had not seen a case of typhoid fever for twenty-six years, when every member in the Association had been treating more or less typhoid fever. Cases of typhoid fever in the mountains of Western North Carolina and East Tennessee are different from what they are in South Georgia. There is a difference in type, a difference in severity. A large majority of them will be delirious up there a part of the time during the course of typhoid fever, whereas farther south the disease runs a milder course, as a rule. You may have some intestinal lesions, hemorrhage, but the severity of the attack and the amount of delirium are not present as much as they are in the mountainous country. It may be in consequence of a different condition of the blood, as many of them succumb to the disease who have been delirious for two or three weeks.

As regards aborting the disease by eliminative and antiseptic treatment, we do not know whether that can be done or not. Many of us doubt it.

As regards lobar pneumonia, I believe there is an abortive form of that affection which under careful manage-

ment will subside in three or four days. We know that. We have seen these cases. We have seen them with all the typical signs of pneumonia, with the brickdust sputum, and the temperature drops to normal on the fourth or fifth day. Our text-books, however, do not claim from the history of these cases that they can be aborted by treatment. Typhoid fever may be better in ten days, in two weeks, sometimes three weeks, but it is typhoid fever all the same, and I agree with the author of the paper in that respect.

A Member: I would like to ask Dr. Kendrick to describe his method of aborting pneumonia in twenty-four hours.

Dr. Kendrick: It is claimed by the givers of veratrum that pneumonia can be aborted in twenty-four hours by this drug, and by venesection. Personally, I have not given three doses of veratrum in my professional life. I do not believe pneumonia can be aborted under any circumstances. When I have a case of pneumonia that I can not abort, I never institute any treatment along that line. I simply mentioned this in discussing the subject, that I do not believe, as a rule, there is any abortive treatment of pneumonia, except that free venesection may possibly in the first stage of pneumonia approach the idea of aborting it, but I have had no experience along that line, and I institute no treatment whatever with a view to attempting to abort pneumonia.

Dr. T. J. McArthur, of Cordele: I have been much interested in this discussion, and I agree in great part with the author of the paper and what has been said by the discussers, yet I believe some of the remarks in both the paper and the discussion have been extreme. When I practiced medicine in Southwest Georgia for a few years I occupied the position of saying that we had very

little typhoid fever there. I began to realize that we had fevers there which were not recognized always as typhoid fever. I repeat that I believe that the remarks that all continued fevers there or anywhere else are either typhoid or malarial is an extreme position. I believe that we have malarial fever in the beginning, and especially in chronic malaria that clogs up the system, so to speak. We have full metabolism going on, but the functions of all the organs are interfered with or made sluggish, and as a consequence effete material is retained within the system after the malarial organism has been destroyed, and that the retention of this effete material in the system frequently produces an irritation that causes a fever which is termed by the laity in that section of the country a slow fever. I believe frequently we have fevers that are typhoid that are termed a slow fever by the laity. It is an extreme position to say that all continued fevers there are typhoid or malarial fever. If you say that the trouble originated as typhoid or malarial fever, I might agree with you, but I believe we frequently have malarial fever, and especially chronic malarial fever, where the material elements in the system are disturbed, supposedly by the malarial infection which remains producing a low grade of fever.

We have mild cases of typhoid fever in South Georgia, and I may say in malarial districts. As to why we have it, I do not know. I am inclined to think that in the last two or three years probably nearly all of our people who live in malarial districts have had at some time their systems charged with malaria. Nature in her efforts to fortify the system against the infection of the poison forms toxins to combat that poison, and in doing so probably the typhoid germs in the system are made less virulent. It holds them down to some extent. It is either

that or the conditions there make the germs less virulent. I am inclined to think that a good deal of it is due to the condition of the blood itself. The effort of nature is always to fortify the system against destruction by the malarial parasite. It fortifies itself against the infection of the typhoid bacillus.

While I was very much interested in the paper and the discussion, I rose particularly to say that some of the remarks that were made were extreme.

Dr. St. J. B. Graham, of Savannah: Unfortunately, most of our text-books on malaria are written by men who reside north of Mason and Dixon's line, and outside of the work of Italians we do not get any idea from our text-books of the real malaria that we see south of Augusta and even in Augusta.

As regards malaria being produced by a protozoon, an animal organism, and typhoid fever by a vegetable organism, it is impossible to have such a thing as a hybrid disease, because animals and vegetables would not mix. It has been well shown by the records of the United States army during the time of the invasion of Cuba that typhoid fever and malarial fever existed in fifty per cent. of the cases together. It was not typho-malarial, but it was malarial fever and typhoid fever at the same time, because one differs from the other. In malaria the organism is usually found in the blood. It appears in the blood at some time, but not at all times, as is well-known, because we may have a pronounced case of malarial fever without the organism appearing in the blood, but by puncturing the spleen we can obtain the organism. It stays in there; it seeks dark recesses in which to live, to germinate, and sporulate.

As to whether this protozoan organism produces a toxin or not, nobody knows to-day, because we know that all

vital organisms produce a toxin, and patients die not from the germs themselves, but from the toxin produced by the living germs from human organism. Furthermore, gentlemen, I believe that there is not only a third fever, but there are many others. It is well-known that the malarial organism was not discovered until 1885. Previous to that time it was an unknown entity. The germ of typhoid fever was not discovered by Eberth until 1882.

In 1900 I read a preliminary paper before this Society. For nine years I carried on researches along this line, and used all of the precautions known to science to-day. For seven years I have a record of half a thousand cases of this so-called third fever, or disease, taken from the hospitals and military forces in Savannah, Georgia. Those are all pertinent cases, and I went into them both from a bacteriological and biological standpoint. Last summer I had the good fortune to get three men who had nothing else to do who were willing for a consideration to undergo this ordeal. These three men were confined in a sealed room for five days. The windows and doors were barred. There was a doorkeeper at the door, so that nobody was allowed to go in or out of the room unless under orders. These men were confined in the room for eight days. An examination of their blood was made, an examination of the urine was made, and there was no diazo-reaction. There were no malarial organisms in the peripheral blood. One man received a hypodermic injection from a tube culture; one received it by spray in the nose; another drank it. All three men went through a short fever until they got well. They did not get any quinine or abortive treatment of typhoid fever. They got simply brewers' yeast, from which they recovered. I have a record of over fifty cases of this third fever treated by

nothing but brewers' yeast, and it gets well in twenty-one days. These cases do not come to post-mortem. In this third disease you will find no malarial organisms in the blood, no malarial organisms by puncture of the spleen. You find no Widal's reaction; you find no diazo-reaction in the urine. What are you going to do about it?

Dr. R. R. Kime, of Atlanta: Those who have practiced medicine in the different sections of the country, and those who have practiced in rural sections in their early development, have seen many cases of malaria develop, but as the country became more thickly settled, and the ponds were drained and mosquitoes destroyed, there was less malaria, but, on the other hand, an increase of typhoid fever. When you crowd people together you will have an increased number of cases of typhoid fever, on the one hand, and a decrease in the number of cases of malaria, on the other, particularly in country districts, as infection from one patient to another becomes more common.

Dr. Palmer (in closing): My paper was not based on any pathological or bacteriological researches, but it was simply a clinical bedside study, and I thank you very much for your discussion.

NEPHRITIS—ITS TREATMENT.

By A. P. HANIE, M.D., Hartwell.

Synonym, Bright's disease. Aetius in the fourth, Avicenna in the eleventh and Van Helmont in the last quarter of the sixteenth century attributed certain cases of dropsy to disease of the kidney, and although Cotunnius, 1770, discovered that the urine of dropsical patients coagulated by heating, our first knowledge and insight into the true condition of non-suppurative diseases of the kidney dates from the memorial thesis of Richard Bright, published in 1827, and subsequently. Nevertheless, it is true that Wells (1806), Blackall (1813), Alison (1820), anticipated somewhat the observations of Dr. Bright. Their contributions were mere fragments of literature, and their reasoning in a large part erroneous.

Shortly after the publication of Dr. Bright's observations concerning the anatomical and pathological lesions, confirmation came from all quarters of the globe. Up to this time limited attention had been paid to the physiology and pathology of the kidney, and but little was known of its minute and microscopical anatomy.

However, this stimulated interest and directed attention to the study of this important organ, and it is interesting to note the wonderful progress made within a few years in histology, pathology and physiology of the kidney. Indeed, with such precision of knowledge and such accuracy of observation many of the statements made have withstood the searching inquiries of recent times.

In this connection, I wish to state that the subject, Nephritis, is too extensive for one to discuss the entire subject within the allotted time—therefore, I shall dwell upon the etiology and treatment of the disease. Nephritis is inflammation of the kidneys involving the epithelium, vascular and intratubular tissue, caused by or arising as a result of overwork and the direct application of irritants to the kidney structure proper; to the effects of toxines upon the kidney structure in transit; second, by affecting the nutritive value of the blood supplying the organ; third, by their poisonous effects upon the central nervous system, thereby interfering with the functional activity of the organ. These causes may act independently of each other, or they may act singularly or collectively.

The toxic agencies that produce this degenerative change in the kidney are no doubt many. The exact chemical composition of these poisons we know but little; however, by their clinical manifestations, they are revealed to us, and from the evidence at our disposal; many of them are products of metabolism, such as xanthin and hypoxanthin poisons, that nominally are oxidized and excreted as a harmless product, uric acid. These circulating toxines not only produce changes in the kidney, but in all those organs that are supplied by end-arteries—the kidney, brain and retina. This explains the frequent involvement of these organs in Bright's disease. The fact that the retina and the brain are injured before the kidney, oftentimes with serious and fatal apoplectiform brain lesions and retinitis, bears out this conception and constitutes a valid argument against the common belief that the brain and retinal changes are secondary to that of nephritis.

Toxines, however, may be divided into two groups:

1. Those toxines arising as products of tissue meta-

bolism, exclusive of the influence of bacteria, and those produced by bacterial life. These are generated within the organism, and are known as endogenous toxines, and upon their influence depends the condition known as auto-intoxication.

2. Toxic agents introduced from without, in the ordinary acceptance of the term—poisons, and are known as exogenous toxines, and when introduced into the organism produce a condition similar to that referred to above, known as hetero-intoxication.

In order to understand the action of these toxines upon the organism, it is necessary to consider the life of a unicellular being. The phenomena of nutrition is characterized by four series of cellular action; two chemical and two physical.

(1) A physical phenomenon, endosmosis, by which nutrition passes from without to the interior of the cell.

(2) A chemical phenomenon, assimilation, the storing up of force.

(3) Another chemical phenomenon, disassimilation. The disengagement of accumulated energy.

(4) A physical phenomenon, exosmosis, by which the useless and harmful matter is thrown out of the cell. In order that endosmosis and exosmosis may be produced, the nutritive substances must be in a state of solution. In physiology, as in chemistry, active manifestations can not take place unless the substances are dissolved. The same law is equally true in pathology of this condition. Toxemia is possible only when these substances are soluble, or in solution, in order that they may be absorbed or penetrated into the blood and interstitial fluids, and thereby modifying their chemical composition. Therefore, let us remember that toxines are substances which, when introduced into or formed within the organism, are capable of

disturbing, *even more,* of abolishing, the life of anatomical elements by directly, or indirectly, modifying the liquid medium containing them. This being true, let us understand that in every case of intoxication there is an alteration of the glands throughout the economy, especially those charged with the destruction and elimination of poisons. That the liver, the kidney, the thyroid gland, the suprarenal capsules, and the skin, are more or less affected. We must conclude that all work together to prevent the destruction of the organism. The source of these bodies are twofold: The gastro-intestinal tract and the proper tissue of the body. The most prolific source is a disordered bowel. *There is no disease that remains local.* The disordered digestion not only directly leads to the formation of putrefactive compounds in the gastro-intestinal tract, and the absorption into the blood and the nutritive tissues of juices of a most irregular and highly toxic degenerate compounds of the albumins, fats and carbohydrates of the food, but they also lead to hepatic insufficiency, a disorder that is instrumental in causing a flood of poisons to circulate through the organism, thereby modifying the chemical composition of the blood, and influences the entire economy. It is not surprising to find that the liver cells are often impaired in their function when the gastro-intestinal tract is disordered; for all of the poisons generated there are taken up by the capillaries of the portal circulation and are carried through an intricate labyrinth of closely interwoven capillaries to the liver cells; for a time the latter may withstand the stream of toxic matter, and can properly exercise their disintoxicating function, but an overwhelming mass of putrefactive material, flooding them at one time, or small quantities of putrid excrement irritating them chronically, must needs impair their function and render them inadequate to pro-

tect the organism, as a whole, from bowel poisoning. When this occurs intestinal toxines filter through into the circulation beyond, exerting their deleterious effects upon the heart, the arteries and brain, and the groundwork of the eye as well as the entire organs. The change in the quantity and composition of the bile, moreover, reduces its germicidal power so that intestinal putrefaction is increased, or, at least, not checked; constipation supervenes, right disassimilation of the enteric contents is prevented; the assimilation of fats is decreased, and consequently the general nutrition is disturbed. In this way a vicious circle is closed, and both in the bowel and in the tissues at large poisonous bodies continue to be formed that are capable of producing numerous disorders, among them many of the symptoms of Bright's disease.

TREATMENT.

Based upon the opinion that many cases of nephritis originate as a result of gastro-intestinal disorder and, by implication, hepatic insufficiency. And this is borne out by the experience and observation of every careful observer. We can do much for this victim by conservative treatment of the earlier stages of this disease, should treatment be directed to correcting the disordered bowel and liver. I believe that in the majority of cases early attention to the digestive tract will check the progress of the disease and not infrequently produce a restitution to the normal when the heart is considerably hypertrophied, and when the kidneys are already showing evidences of nephritis. There are many cases of Bright's disease that we do not understand. These are probably due to some obscure perversion of metabolism. Of course these are more difficult to treat, as there is nothing tangible to attack, for who can intelligently combat a tissue anomaly that is hereditary in char-

acter and in which a dark, nervous element manifestly plays a commanding role? However, when nephritis is established, it is our duty to counteract the deleterious effects exercised upon the organism by the inadequacy of the renal functions. In the management of Bright's disease it is our duty to first prevent intestinal putrefaction, to stimulate hepatic functions, and to prevent, as far as possible, obscure metabolic changes. To prevent putrefactive decomposition in the intestinal tract swarming with bacteria is by no means an easy task. Nor do any remedies that we have at our disposal act under such circumstances. Therefore we must, by the administration of mercurial and saline purgatives, empty the gastro-intestinal tract. Then, and not till then, is the administration of food or remedies advisable; after the digestive tract is placed in the best possible condition, we should begin the administration of our remedies. The sulpho-carbolate of zinc and the bile acids, while neither of these substances constitute an intestinal antiseptic, the administration of either of these drugs will check, at least, the putrefactive decomposition of albumins, and as the albumins furnish the bulk of the most toxic intestinal bodies, much is thereby gained by their administration. If sufficient sulpho-carbonate of zinc is given all putrefaction will stop. When this is accomplished, the urinary evidences of bowel putrefaction also disappear, as manifested by the reduction of the indican and the other aromatic urinary ingredients that appear when albumin putrefies in the gastro-intestinal tract. The administration of the bile acids is of value; these bodies possess germicidal properties, and greatly stimulate hepatic function, thereby directly combatting the development of hepatic insufficiency and its consequences.

After this end is accomplished, the patient should be

given a generous diet, allowing only those articles of food that are the least irritating to the kidney, and they should be in as condensed or concentrated form as possible, as liquids increase the action of the already overworked organ, and increase the arterial tension. When nephritis develops, the kidney at once stops the elimination of water. We see that liquids pass the parenchyma with difficulty, and to attempt to force it through is to irritate the organ, which should be kept at perfect rest if possible. It is true that in the late stage of interstitial nephritis polyuria appears, but the urine contains few solids in solution, and there is practically nothing to eliminate. The administration of liquids is, of course, of no value to the organ, and is directly harmful to the overworked heart.

A nephritic kidney fails to properly eliminate sodium chloride. The theory has been advanced that edema is produced by the presence of sodium chloride in the tissues; that by osmotic action liquids are drawn from the blood into the tissues and edema develops. By withdrawing the chlorides I have seen edemas rapidly disappear, and albuminuria often decreases. However, during the course of nephritis, if a patient suddenly increases weight, look for edema and effusion into the cavities, and, at least, withdraw the chloride from the foods for the time being. So far as nephritic manifestations are concerned, vasodilators are of much value. When the blood pressure is relieved albumin always decreases in the urine, and the epithelium regain their tone and functional activity is near the normal; as a valuable adjunct to this treatment, rest in a warm bed, hot baths, and a quiet life, away from the cares and worry of business, and in a dry, warm climate, is the ideal form of treatment. I can not say too much in praise of judicial massage and rest in a warm bed, for

this certainly does dilate the superficial vessels, and the general arterial tension must necessarily fall.

Static electricity in the treatment of Bright's disease, according to Professor Nuswanger's report, are phenomenal. The manner in which the nervous system influences the secretion of the various organs by causing them to respond to the vibration caused by electric currents is quite plausible. I shall, therefore, quote in part what Nuswanger says in the chapter devoted to the treatment of chronic Bright's disease. Nephritis is a disease of central nervous impairment. The path by which impressions are conveyed to the kidney are the splanchnics and the spinal cord, and whenever this nervous tract is impaired the kidney function is affected.

The other remedies indicated in the treatment of this disease are those that will hasten the oxidation of waste products.

The result of decapsulation of the kidney is a complete failure, and has no place in the successful treatment of the disease.

Static electricity is the logical remedy, because the evolution of oxygen always accompanying this modality not only hastens the elimination of waste matter, but gives a better tone by its vibratory action to the nerve centers affected. Static electricity is a powerful equalizer of the nervous forces, as is evidenced by its influence on the temperature, respiration and pulse. It will temporarily reduce a high temperature, or it will elevate a low or subnormal temperature. It will reduce a high pulse or raise a low pulse.

You can also see the good effects of static electricity in the increased elimination of waste products, such as urea, CO_2, sweat, etc.

Take a patient suffering from poor circulation, having

cold feet and hands. Include him in the static circuit, and in a little while his feet and hands are warm and he is perspiring. What does it?

Simply the equalization of the nervous forces.

Every day brings evidence that convinces the author more firmly than ever that nephritis is a disease of central nervous impairment.

The natural paths along which impressions are conveyed to the kidney are the splanchnics and the spinal cord, and whenever this nervous tract is impaired the function of the kidney is correspondingly affected.

Bernard has produced albumin in the urine by irritating a certain portion of the fourth ventricle.

The author was forced to the conclusion of the nervous origin of this disease by the character of the person affected.

We rarely find a hard-working man of the laboring class having this trouble, but it is people who use their brains, those who have mental worry. *Doctors,* lawyers and preachers—in other words, it is the people who press the button that rings up the great sympathetic until the battery which moves it is exhausted.

Grief alone has been known to produce Bright's disease. How could grief produce the disease if it were not through central nervous channels?

So it is through the nervous system that the wonderful effects are obtained by electricity.

From the very beginning our patient begins to improve. There is increased elimination of urea, albumin, disappears and the oxidation is complete. The microscopical examinations fail in a short time to show casts of any kind in the urine.

The treatment advised by Dr. Nuswanger, in most cases is the negative head breeze for fifteen minutes, fol-

lowed by positive insulation for the same time. The Morton wave current to the spine is alternately substituted for the head breeze.

DISCUSSION ON DR. HANIE'S PAPER.

Dr. F. W. McRae, of Atlanta: The essayist made a statement to which I shall have to take exception, and that was, there is absolutely no value in the surgical treatment of Bright's disease. I know four men whose lives have been saved by the surgical treatment of this disease. Three of the operations were done by Dr. Edebohls, of New York. I did one myself. I had occasion to follow up the cases. One of them was a medical student, who first matriculated in the university. A diagnosis of nephritis was made and confirmed. He was kept under observation during the entire session, and at the close of the session he was advised to go home, but he chose to go to Dr. Edebohls, who decapsulated both kidneys and kept him under observation for a considerable time. He was a third-year medical student. He came to the Atlanta College of Physicians and Surgeons the following year, and put himself immediately under my observation. I had the history of the case from Dr. Edebohls. The patient himself was intelligent, and I watched the case during the entire session. Every three or four weeks I examined the urine. He went through and graduated with distinction, and has remained well ever since.

Dr. Nicolson knows of one case that is practically cured, although the man still has a little albumin is his urine.

One of my own cases, a man, sixty-four years of age, who was practically moribund, had been treated by all the different methods that are employed, and since I gave up general practice I was called in consultation and found

him practically comatose. He used liniments and various remedies, and gradually grew worse, until he was in a dying condition. I suggested operation to his wife, and she consented, and almost without knowing he was being taken to the operating table we operated on him, and not only decapsulated but opened the kidneys. It has been four years since the operation was done, and he is now enjoying good health and apparently has been cured.

I have operated on one young lady within the last few months in whom I did double decapsulation, and I would like to have Dr. Block say a word or two with reference to that case, as I do not know what has been the result. Clinically, she improved after the double decapsulation, and three or four weeks later I removed the appendix, did some abdominal work, and she went through that without any trouble. I have seen all signs clear up repeatedly in these cases where one kidney was enlarged and where there were albumin and casts in a case of movable kidney from decapsulation and nephropexy.

Dr. E. B. Block, of Atlanta: I will say that the patient upon whom Dr. McRae operated had edema of the feet before the operation, which subsided under rest and diet before the operation, and that the operation did not cause any appreciable diminution in the quantity of urine which she had been passing, and that the albumin slightly increased immediately following the operation, but subsequently sank lower than it had been before the operation. While it is a mooted point as to how much importance we should attach to the quantity of albumin found in the urine, still I would rather see a decrease in the quantity of albumin in the urine of my patients than a large quantity, but whether it has any significance I am unable to state.

In regard to some of the remarks made by the essayist,

I will say that in the toxic states of Bright's disease, where there is a profound toxic condition, a stuporous condition, coated tongue and fetid breath, very copious draughts of hot water, given every hour or so, are unquestionably valuable when combined with diaphoretics and pilocarpine injections, and I think we will find that hot water does far more in these cases than any drugs we know of. In the juicy cases of Bright's disease, where there is a great pouring out of fluid, dry diet is of value, in that it helps to reduce the extreme edema where there is a pouring out into the bronchial tubes and effusions into the chest.

Dr. J. W. Duncan, of Atlanta: I am glad that Dr. Block mentioned the use of hot water, as I believe the essayist did not suggest that any fluids be given to a patient with Bright's disease. That is a strange thing for this Association to sanction, namely, to give a patient no fluids whatever in this disease, when we know that the human body is largely water, and I am glad Dr. Block mentioned giving hot water. Above all things, I think a patient ought to have some fluid in this disease.

Dr. J. W. Daniel, of Savannah: I think Dr. McRae misunderstood the situation. The essayist, in reading his paper, made a general classification when he spoke of Bright's disease, and he did not say what form of kidney lesion he has special reference to.

Dr. McRae stated that his operation was successful in large congestive kidney. In the kidney probably that the doctor was referring to he had reference to small granular kidney, in which we get an arterio-sclerotic condition. In these conditions decapsulation is of no value, because there is no tension on the capsule, for which Dr. Edebohls advocates his operation.

Dr. Block said that hot water and diaphoretics are of

value. The trouble in the treatment of kidney lesions or of Bright's disease is that we so often fill up the patient and try to sweat it out of him. In sweating the patient gets rid of non-toxic salts, but in getting rid of the water we rather increase the intoxication by intensifying the salts in the blood. The liver is another organ which is very much abused in the treatment of nephritic conditions by giving calomel, which is not indicated. The proper thing to do is to let the liver rest and let the alimentary canal rest. Put the patient on nothing to eat but small draughts of water, sufficient to quench thirst, and if you give him anything give him salicylate of soda, which is a slight hepatic stimulant and intestinal antiseptic.

TREATMENT OF CONSTIPATION.

By THEODORE TOEPEL, M.D., Atlanta.

I was prompted to write this paper by a discussion which took place at a meeting of the Atlanta Medical Society about a year ago, also on account of the wide experience which I have had in prescribing some simple methods of treatment and the good results derived therefrom. Before I enter upon my chosen subject, I ask your indulgence to a few general remarks by way of introduction.

Life, according to Herbert Spencer, is characterized by the power of living beings to preserve a mobile equilibrium within their environments, or, as he phrases it, by "the continuous adjustment of internal relations to external relations."

Natural recuperative power has been developed, not through the intaking of substances foreign to the organism, but by physical, chemical, and, finally, psychic reactions of the cells, tissues, organs, systems, and, a factor not to be ignored, of the organism as a whole.

We must recognize that disease and recovery are alike vital processes in which the organism itself is the most active agent, and that neither morbific nor therapeutic influences endow the organism with new attributes or introduce into its operations new powers, but we must keep in mind that disease and recovery are often, if not

always, one continuous process. A health-preserving and health-restoring tendency exists; that is a natural endowment, and not the gift of art, and that it is dependent upon the inherent properties of cells, tissues, organs and the organism. Some of these qualities are constantly manifested, while others are evoked only in reaction to perturbing influences. Salutary reactions, however, may be delayed, deficient, or excessive; and thus art must come to the assistance of nature, and therapeusis finds its reason for being. All successful treatment, nevertheless, depends upon the evocation, stimulation and control of the recuperative reactions, together with the suppression, diminution, or neutralization of antagonistic reactions likewise occurring automatically as the result of extraneous, morbific influences or of internal failures or disturbances.

I have great faith in the power for good of the right drug, given at the right time in the right dose. Nevertheless, a more restricted use may be made of drugs with less danger of harm-doing by reason of mistake in the election of drug, dose or time, by the physician who familiarizes himself with the powers of the remedial agent falling into the group of natural or physiologic therapeutic means.

But all that exists in nature is natural—drug equally with sunlight, microbe equally with antitoxin; and, under all the circumstances, the disordered functions of the paralytic, for example, are equally physiologic with the co-ordinated functions of the athlete. Moreover, any intervention by the physician in a case of illness, be it merely to enforce rest, or to regulate diet, or to open the windows of the sick-room, is an exercise of his art.

Hippocrates, the empiric, was the father of scientific medicine; the dogmatists were his opponents, and dog-

matism is still the enemy of medical progress. Rational empiricism in medicine consists in the orderly arrangement and analysis of facts observed not only in the laboratory, but also at the bedside; and in making, from the data thus established, inductions to the principles of science, and deductions to the applications of art. In the experience to which rational physicians look, must be included the whole history of the human organism, and, indeed, so far as these can be learned, a study of the conditions that have affected the living matter before it was human; for in the actions and reactions of living matter with its environment, from the simplest to the most complex, are to be found the influences that have determined, not alone the physiologic, but also the pathologic, development of man, together with the power of the organism to recover from the disturbance that we term disease.

Speculation upon the origin of living matter is enticing, but not profitable. Given the original living matter with its inherent forces and tendencies, and its development into man, and man's coming into his present physical, mental and moral conditions, are the resultants of habit and environment. Under these general heads are to be understood the effects of climate and of weather (including heat and cold, the physical and chemical constitution of the atmosphere, sunlight and other light, electricity, etc.), the use of water, food and methods of feeding, rest and exercise of function, physical and mental, of which last not the least important phase is one commonly overlooked—emotion. These and similar influences having helped to make man what he is, may well be employed to remake him when he departs from the normal.

Hoping that this digression has not been too lengthy, I shall now proceed with the discussion of my subject.

Constipation may result from one or more of the following causes: 1. Insufficient quantity of solid food. 2. Too highly nutritious or concentrated food. 3. Insufficient fluid. 4. Astringent food and drinks. 5. Indigestible food. 6. Lack of digestive fluids. 7. Irregularity in diet. 8. Obstruction from overeating. 9. Lack of peristalsis. 10. Lack of exercise. 11. Certain diseases, such as anemia, neurasthenia and hysteria, chronic infectious affections of the liver, stomach and intestines. 12. Habitual drug-taking. 13. Weakness of the abdominal muscles in obesity or from over-distention in repeated pregnancies. 14. The presence of tumors, physiological or pathological, pressing upon the bowel. 15. Atony of the colon, particularly of the muscles of the sigmoid flexure by which the feces are propelled into the rectum, etc.

TREATMENT.

Before prescribing for constipation, interrogate the patient minutely as to his daily habits of life, such as occupation, hours for meals and for exercise, recreation and sleep, the kinds of food and quantity usually eaten, the amount and kinds of fluids drunk, hour for going to stool, the use of stimulants and tobacco, and presence of mental worry and anxiety.

DIET.

The principles of diet in the treatment of constipation must be based upon supplying digestible food, which will excite peristalsis either by its bulk or its physical and chemical properties. Vegetable food in general, as distinguished from nitrogenous diet, furnishes a much larger proportion of waste matter. Herbivorous animals have more abundant evacuations than do carnivorous. The

most useful articles for constipation are abundant water, coarse brown or bran bread, oatmeal, butter, fresh green vegetables (lettuce, spinach, rhubarb, etc.), prunes, figs, apples (cooked or raw), peaches, berries, buttermilk, apple cider, honey, English walnuts.

Persons suffering from habitual constipation do well to give up the following articles: Eggs, milk, sweets, pastry, puddings made of simple amylaceous substances, such as rice, sago, etc., fried foods, rich gravies, sauces, curry, strong condiments, pickles, cheese, tea, sour or red wines.

HYDROTHERAPY.

Careful observation has convinced me that the addition of some form of hydrotherapy enhances the value of medical gymnastics and dietetic measures, and often succeeds after the latter alone have failed. The hip bath, as recommended by Fleiner, of two to five minutes, temperature of 50° to 68° F., once or twice daily, and an abdominal compress of 50° F. at bedtime, have given excellent results. A form of abdominal douche, or hydrotherapeutic massage, from a one-eighth inch nozzle, slowly played over the region of the colon, either at 45° or 110° F., has often furnished satisfactory results. This form of massage can be continued from five to fifteen minutes, if done slowly, and repeated once a day before the usual time for evacuation. This form is highly recommended by Nothnagel and Hackel.

In constipation occurring in gouty, anemic or otherwise depreciated patients, a thorough intestinal irrigation with salt solution, administered every day, removes ptomains. If followed by the rapid introduction and outflow of eight ounces of water at 40° F., the reflex stimulation is aroused. It is not advisable to use the enormous colonic irrigation, because of the overdistention and conse-

quent enfeeblement of the bowels. In all cases of constipation tonic hydriatic procedures are of as great value as is muscular exercise, which it may often substitute temporarily in feeble patients.

OLIVE OIL INJECTIONS.

This is a very satisfactory measure, and is highly recommended by Kussmaul. Inject from three to ten ounces of warm olive oil in the rectum at bedtime. This is retained during the night, and usually results in an evacuation after breakfast on the following day. If the oil is introduced slowly, at a low pressure by the force of gravity, the patient should have no difficulty in retaining it for the night. The following is described by Dr. Hershel as the best apparatus to be used in giving oil injections:

"A glass funnel of a large relative capacity to its height, provided with a loop by which it can be suspended at a convenient height above the patient, is fitted with about 28 inches of rubber tube of ⅜-inch caliber, and terminates in a nozzle. I have found the colon tube of equal efficiency. The outflow of the oil is controlled by a spring clip. The injections can be made by the patient without assistance. The oil is first heated by placing the bottle containing it in a basin of hot water. The funnel is hung on a nail above the bed. The patient lies on his back directly under it with the hips on a pillow, introduces the tube and waits until the funnel is empty. It is best to commence with five or six ounces and to reduce the dose daily until the smallest amount which will produce an action of the bowels is found. In a few days it will probably be found that a few ounces of oil at bedtime will produce a daily evacuation. The effect may then be tried of using the oil on alternating nights, and as the case

progresses the action of the oil will extend over a longer period and will be followed by several daily stools. When this period arrives the injection should be ordered to be taken only on the evening of the day on which the action has not taken place.

MASSAGE.

The most common and important use of abdominal massage is to relieve chronic intestinal inactivity. The various manipulations are complex, and when rightly performed require the skill and experience of thoroughly trained operators. The general causes of constipation, as regards conditions of the bowel which may be relieved by massage, are the following:

1. Relaxed abdominal muscles, resulting in prolapse of the bowel and other viscera, and constant stasis of the intestinal contents, with resulting dilatation of the colon. The dilatation may exist either in the cecum or the sigmoid flexure, or the entire colon may be affected. In consequence of delay to evacuate the bowel the fecal contents often form hard masses, as the result of the excessive absorption of fluid due to their prolonged sojourn in the colon.

2. Deficient production of bile, due to an inactive state of the liver, either as a result of inactivity in the portal circulation or some local functional derangement. This condition, commonly spoken of as "torpidity," or "biliousness," is one in which the liver fails to perform its work effectively in destroying ptomains which are received in the blood or are formed in the alimentary canal, or to convert into less toxic forms the leucomains, or tissue poisons, normally developed in the system and prepared by the liver for elimination by the kidneys.

3. Deficient activity in the nerve elements supplying

the intestines and controlling the reflexes by which peristalsis is maintained, the contents of the bowels moved along the intestine, and the normal diurnal rhythm maintained whereby the residue reaching the lower part of the colon is regularly discharged from the body.

The immediate indications in relation to the removal of these causes, so far as massage is effective to accomplish it, may be enumerated as follows:

1. Increase of glandular activity by an increase of the activity of the blood current in the portal vein, and stimulation of the abdominal sympathetic ganglia, the nerve mechanisms which control the motor, vascular and secretory functions of the intestines.

2. Increase of peristaltic activity through a stimulation of the nervous reflexes by which this activity is maintained, and by an increased outflow of bile from the liver, the natural laxative by which rhythmical peristaltic activity is promoted.

3. Relief of passive congestion of the portal system, and of the viscera under the influence of this branch of the circulatory system, especially the liver, spleen, stomach and intestines, thus aiding the return of these structures to a normal state and a consequent restoration of their functions.

4. Mechanical dislodgment of the contents of the colon.

5. Development of the abdominal muscles, thereby increasing intra-abdominal tension, which favors expulsion of the intestinal contents.

6. Replacement of displaced viscera. The procedures offered by massage, by which these indications are best met, are the following:

1. *To stimulate the nervous reflexes, and hence the peristaltic, glandular and vascular activities, under control of the abdominal sympathetic.*

(1) *Reflex Stroking.*—With the ends of the fingers make very light strokes in a circular or semicircular direction about the umbilicus. Also make vertical strokes along the sides in the mammary line, and parallel with the rectus muscle. Strokes may also be made over the fourth, fifth and sixth ribs at the sides of the chest. The profound reflex effect produced in patients who are very sensitive is evidence of the strong influence of this procedure upon nervous activity.

(2) *Vibration.*—Strong vibration applied to the abdominal contents has been shown to be one of the most powerful means of stimulating the nervous reflexes, circulation, glandular activity, and peristalsis, which can be employed for this part of the body. I am now using the electrical vibrator in place of hand vibration, as I was taught.

(3) *Percussion.*—This is unquestionably the most powerful of all the stimulating means which can be applied to the viscera through the abdominal wall. All the different modes of percussion, viz., tapping, spatting, clapping, hacking, and beating, may be usefully employed.

2. *To produce mechanical effects by means of which stasis of the intestinal contents may be overcome and accumulated fecal matter dislodged, at the same time that the circulatory and glandular activities are stimulated.*

For this purpose deep kneading is especially to be recommended. This may be accomplished by a number of different procedures: (1) Digital kneading. (2) Kneading with the closed fists. (3) Kneading with the thumbs. (4) Mass kneading. (5) Palm kneading. (6) Rolling. (7) Massage of the gall bladder.

3. *To strengthen the abdominal muscles.*

Massage alone is not sufficient as a means of develop-

ing the abdominal muscles, as is the case with all muscular structure. They must be brought into voluntary action by proper gymnastics. Kneading is the most effective procedure afforded by massage for stimulating development of the abdominal muscles. Both superficial kneading and deep kneading may be employed.

MEDICAL GYMNASTICS.

In most cases gymnastics is sufficient alone, and is what the patients generally wish, because it is less troublesome and cheaper. To be effectual, gymnastic movements must be used perseveringly; they should be gone through every day at least three times. It is important to impress upon the patient that the treatment should not stop as soon as improvement begins, but it should be continued even a few months after, if constant good health is to be gained. Every patient treated this way should be advised to rub his abdomen himself, for a relapse can easily occur, but can also easily be avoided, if the patient sacrifices ten to fifteen minutes daily on an abdominal kneading.

Gymnastic exercises for constipation:

1. Stretch stride standing, bending forward.
2. Stretch stride standing, bending obliquely outward, with flexion and extension.
3. Stretch stride standing, bending forward, swing arms down—back (wood-clapper).
4. Sitting trunk extension and flexion.
5. Back lying hip balancing, knee flexion and extension, etc.

MECHANICAL MASSAGE.

Numerous instruments have been devised to imitate the action of the hands, but as yet no device has been found quite to equal the human hand for

the administration of kneading movements. One of the most useful of all the several forms of mechanical massage is mechanical vibration. Under this heading may be appropriately mentioned the "Cannon-ball massage." A cannon-ball covered with leather is a valuable mechanical accessory in the application of abdominal massage. It should weigh from four to six pounds, and should be rolled upon the abdomen, following the course of the colon from right to left. It should be used for fifteen minutes morning and evening, on an empty stomach.

Dr. H. Beer (Klinisch-therapeutische Wochenshrift) describes a mechanical laxative for infants. He uses the bulbous end of an ordinary rectal thermometer covered with vaseline, and inserted per rectum as in taking the temperature. It is then gently pressed against the sphincter ani and keeping it in the axis of the rectum, it is made to describe smaller and larger circles, as in dilating the sphincter. After two or three turns the sphincter is felt to relax, the rectum contracts, the anus opens and the act of defecation takes place reflexly. The effect is very prompt when the rectum is filled, and is absolutely harmless to the child.

In conclusion, I wish to say that I have not touched upon all the physiological remedies, but suffice to say that if the physician studies the remedies mentioned, and the patient, overdrugging would soon be a thing of the past. One thing should not be forgotten in treating obstinate cases of constipation, namely, to insist on regular habits, particularly in the young, whether the desire is present to have an evacuation or not, regularity of habit must be insisted upon.

INTUSSUSCEPTION.

By MARION McH. HULL, M.D., Atlanta.

It is not the purpose of this paper to present an exhaustive discussion of this affection; but to remind the members of this association that they are apt to meet with it any day, to set forth the symptoms that will enable an early diagnosis to be made, and to differentiate it, so that the patient can be given the best chance of relief by an early operation. These observations are based upon the study of about 1,300 cases of intussusception occurring in infants and children gathered from the literature, and a few in my own experience. Of these Hess, of Chicago, has collected 1,028, Cole and Clubbe, of Australia, 210, Wallace 20 and 24 which I have collected from the literature and my own records, the names of the authors being given in the bibliography. Early diagnosis is so essential that I have sought to discover from this large number of cases some means that will enable us to recognize the condition before the picture is too clear to be of use.

Any man who is practicing among children must bear constantly in mind the possibility of this very dangerous affection. When this point is gained, more than half of the battle is won. Clubbe states that the hospital internes in Melbourne rarely fail to "spot" these cases, so well drilled have they been as to its possibility.

Always suspecting it, the diagnosis would be very easy if the cases always presented the classical symptoms. How

easy would be the diagnosis of any disease if the patients would be so accommodating as always to present the syndrome of a typical case! A previously healthy child is seized suddenly with violent pain in the abdomen, which is paroxysmal. The child soon begins to vomit, and continues to do so, especially when given anything by mouth. It has a good deal of tenesmus, and after a few hours passes bloody stools but no feces. Its skin is cool, and rectal temperature low, but pulse and respiration are rapid.

It soon passes into a state of collapse, and all efforts at obtaining an evacuation of the bowels are futile. An examination of the abdomen shows a sausage-shaped tumor usually in the left iliac region, and it can also be felt per rectum.

No one could fail of a diagnosis with such a symptom complex. The difficulty, practically, lies in the fact that any one or more of these symptoms may be entirely absent, delayed or subdued.

Huber has reported a case in which the only symptom was pain occurring in paroxysms, until the fourth day of the disease, when a tumor was discovered in the subcostal space on the right side, resembling a floating kidney, after the patient had been anesthetized for operation.

In one of my cases the only symptoms were shock, nausea and constipation. In another the only symptom to be found was a peculiar character of respiration to which I shall call attention later. Upon this I made the diagnosis, which was confirmed by operation.

Because the symptoms are not always typical is the *raison d'etre* of this paper.

Let us consider these separately.

Pain: Pain is a very constant symptom. It usually occurs suddenly in a previously healthy child, is paroxys-

mal and exceedingly violent. At first it is intermittent, and later becomes more or less continuous. It is at first referred to the umbilicus, later there is pain and tenderness over the whole abdomen. In the cases studied this symptom was almost universal, being noted as being present in every case but one, where it was absent. This was in one of my own cases, an infant a year old, and if present, was so slight as not to cause the infant any discomfort.

Nausea: Nausea and vomiting occurred in 90 per cent. of these cases. In the large majority it began early, and was more or less constant. The vomitus consists first of the contents of the stomach, and then of bile stained mucus. Very rarely in infants is it fecal. The vomiting is more violent the more complete is the obstruction. It is not projectile. More often there is a great deal of gagging, with a little mucus finally expelled. In a great many cases vomiting is not a marked feature unless something is given by mouth. Whatever this may be, it is rejected very soon.

Constipation: This is one of the most misleading symptoms in the whole condition. It is impossible to say how many times physicians are thrown off their guard by the presence of stools. A child begins vomiting and has colicky pains; if the bowels did not move some obstruction would be suspected immediately; but the fact that there are a few stools, sometimes diarrheal in character, becoming bloody and mucus, leads to an error in diagnosis, cholera morbus, or some other digestive disturbance being supposed to be present. Aside from the error in diagnosis, it leads to the administration of cathartics, which aggravate the real condition. *It is the rule, rather than the exception, for the bowels to move.* The evacuations are fecal at first, representing the contents of the bowel

below the obstruction. They afterward become bloody and mucous. This latter symptom was present in 108 of Cole's 110 cases, in 156 of Hess's 160; in the twenty-four cases of my collection they were stated as being present in nine, as absent in three, and in six no note of it was made at all.

The number of fecal evacuations will depend on the higher or lower location of the intussusception and the previous condition of the child's bowels. The bloody stools will depend on the degree of involvement of the mesenteric vessels.

Tumor: Under anesthesia the tumor can be felt abdominally in almost every instance. Without anesthesia there are a great many cases in which it is impossible to be positive that it is present. In these cases rigidity of the recti muscles, when associated with paroxysmal pains, is at least suggestive of obstruction of the bowel.

By rectum the tumor can be felt in a certain proportion of the cases. It was present in seventeen per cent. of Hess' collection, in 15 per cent. of Wallace's, and in 14 per cent of mine. Its detection is of very little value, as Clubbe has pointed out, since its appearance is usually so late that the condition of the child is hopeless.

General Condition: This is of as much value, if not more, in determining the child's condition as any other symptom. To see a previously healthy child taken suddenly ill, and within a few hours to present the appearance of one long ill, ought to call attention to the gravity of the condition.

The pulse-respiration-temperature ratio is greatly disturbed. The temperature is rarely high, though in some instances it might go to 102 degrees F., or over. Usually it is below 100 degrees F. The pulse is very rapid, and the respiration is usually so when the normal condi-

tion of the thoracic organs is considered. I have noticed in all of the cases I have seen a peculiar character of respiration. I can not describe it better than to say it is a half sigh and half grunt. In fact it has seemed so characteristic that I made a diagnosis of this condition almost from that alone in one case, which was confirmed by operation subsequently. In that case there had been diarrheal movement for three days, and even within an hour before I saw the case. There was no blood, no rectal nor abdominal tumor, no history of pain or vomiting. But the rapid pulse, low temperature, anxious facial expression, and this half grunting, half sighing respiration determined the diagnosis of intussusception in my mind, and made me advise immediate operation; which confirmed the diagnosis.

Other Symptoms: The Signe de Dance—a depression over the right iliac region—has been noted in some cases, but I do not consider it of great value. Noble, of Atlanta, has noticed a faint sweetish odor to the breath in cases of intussusception, but I have not found this mentioned elsewhere. Tympany is not usually present until late in the disease. The abdomen is more often flat, and the muscles rigid to protect the child from pain. In some cases the tumor may be seen, and is found by the mother, but this is rather rare.

Tenesmus is more marked in those cases where the tumor can be felt by rectum.

The skin is often clammy. The eyes are wide open and the expression is one of great anxiety and fright, the lips are drawn and there is great pallor.

Differential Diagnosis: Grisel thinks it important to diagnosticate the variety of the obstruction. I grant that it may be desirable, but not important, for the treatment is the same for all, and no time should be lost in opening the abdomen. You may be sure of the variety then.

In adults the affection may be mistaken for mesenteric embolism, biliary colic, torsion, bands, acute hemorrhagic pancreatitis, acute appendicitis, strangulated hernia, phosphorous poisoning, and tabetic crises. The history of the case will help to clear up the diagnosis in many of these affections. In children, however, volvulus obstruction by Meckel's diverticulum, appendicitis, and undescended testicle are the principal affections that may be confused with this; to say nothing of cholera morbus and dysentery, which should never be, but unfortunately are, mistaken for it. Barnard has reported three cases of tuberculous peritonitis that resembled it very closely. In a very young infant pyloric stenosis has to be eliminated.

Volvulus may be distinguished by the absence of the tumor, by absence of bloody stools, and by the greater tympany occurring early in the disease. When the obstruction is due to Meckel's diverticulum the absence of bloody stools and of the tumor abdominally and rectally will aid in differentiating it. Appendicitis may be distinguished by the above symptoms, and by the tenderness or rigidity over McBurney's point. An examination of the scrotum should determine the diagnosis of undescended testicle.

It seems hardly necessary to go into any detail regarding the differential diagnosis between intussusception and dysentery further than what has been said. The history of the cases should distinguish tubercular peritonitis and pyloric stenosis.

I did not care to go into a discussion of the etiology of the affection, but do think it an aid to diagnosis to say that constipated, breast-fed babies are more liable to the affection, and suspicious symptoms occurring in them should be carefully watched.

D'Arcy Power has shown that the diameter of the large intestine increases out of proportion to that of the small

intestine during the first two years, and that there is a greater mobility of the colon because of the long mesocolon.

These etiological factors may help us in diagnosis, if we bear in mind the age of the patient; especially those under two years, in which cholera morbus and dysentery are more liable to confuse the diagnosis.

Barnard has urged as pathognomonic this fact. In a suspected case of intussusception he gives two enemata of turpentine in water. If the second is returned without feces and with little force, he says the diagnosis is positive.

Huber suggests that colicky paroxysmal pains, associated with rigidity of the recti and localized tenderness over the left iliac region, are sufficient to warrant laparotomy.

TREATMENT.

The object of this paper was to aid us in making an early diagnosis, so that the early operation might be performed. I believe this is the only rational treatment. A high irrigation may be used with advantage to aid in reducing the intussusception; but I could not get my consent to advise it, unless operative measures were used simultaneously. However I shall not enter into a discussion of the operation, as my confrere, Dr. Barnett, will discuss this in an early paper.

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DISCUSSION ON DR. HULL'S PAPER.

Dr. F. W. McRae, of Atlanta: I dislike very much for as good a paper on so interesting a subject to pass without discussion. The Association owes a great deal to Dr. Hull for bringing up this subject. I do not know of anything in surgical abdominal diseases that causes the death of so many children as intussusception, unless it be appendicitis. It is a disease to which children are peculiarly prone, and Dr. Hull has mentioned the only treatment that is effectual in the majority of instances. He has mentioned the time at which treatment must be instituted in order to be valuable. Absolute obstruction of the bowel from intussusception beyond forty-two hours is almost a hopeless condition, if it is not hopeless. Some few cases may recover, but not many. It is only by early diagnosis and prompt resort to surgery that the lives of these little ones may be saved. We are often unable to make a diagnosis of intussusception, but we can practically always make a diagnosis of acute obstruction of the bowel, and whenever we make that diagnosis it matters not from what cause or what may be the cause of the obstruction then it is our duty to resort to prompt surgery, which is just as imperative in this condition as it is in appendicitis.

LESIONS PREDISPOSING TO CANCER.

By M. B. HUTCHINS, M.D., Atlanta.

It is difficult to avoid bringing into a paper of this kind the cause of origin of cancerous growths, since cause and prior lesion are so intimately related. Without some sort of stimulus, or disturbance of cell relation, many of the lesions would never become malignant. Whether a group of cells has been left out of place in fetal life and ready for aberrant growth, or gets misplaced later, can make no great difference for the purposes of this paper, but the latter occurrence seems best to harmonize with the facts. That mechanic, thermic, actinic, chemical, and perhaps local toxic influences, often seem the positive exciting cause of malignant development can not be doubted. What the element is in cell relations that holds the balance in so many cases and loses its control in a few we do not know.

Of all skin lesions tending to cancerous development there are none that rank so high as the rough horny, scale-crusted, irregular, pinhead to all sizes and shapes of points and patches seen on the face, neck and hands. These occur so frequently upon the thin, red, florid skin of people who are either red-haired, or have the "red-haired" type of skin, as to become a definite feature. The crusts are usually composed of small horny cell masses; the skin beneath may show a bit tender, or it may be slightly thickened, irregular. Later one or more points take on

typical epitheliomatous changes, cell-growth, infiltration, erosion, crusting, fissuring, ulceration. Often there are numerous epitheliomata on the one subject. But a majority of people go through life with their "scaly spots," better or worse, without reaching the malignant stage; hence radical treatment for these must await such development.

Closely related to the above, or occurring with it, is the oily, seborrhœic skin with points, discs or patches developing in a greasy surface, and showing greasy scales; sooner or later, erosions, new growth, finally the epithelioma in full development. These two kinds of skins and lesions more frequently show multiple epithelioma. Warty, flat, roughened patches, as of the "senile skin," often form the starting-point of cancer. A persistent fissure of the lip may be the origin of epithelioma. Scars, as from burns, caustics, X-rays, incisions, boils, carbuncles and various injuries, present a condition of cell displacement favorable to malignant growth.

A lesion from the pinch of a cracked and foul pipe-stem has caused death from cancer of the lip. Phimosis, balanitis, at times result in epithelioma. An innocent looking epulis may prove not a fibroma, but a sarcoma.

Lupus erythematosus has been known to degenerate into cancer. Lupus vulgaris scars often so change. An apparently innocent wart may become malign, and keratoses from long continued arsenic. Keene, in his paper before the American Medical Association two years ago, insisted upon the latent dangers in, and the removal of all moles, but was convinced of the impossibility of getting the consent of the patient to such radical prophylaxis. My own observation is that few moles undergo cancerous change; but when they do, especially those of the

pigmented type, their malignance and metastases may be horribly complete; their termination fatal.

The pigmentary type of malignant disease is the product of many lesions. A mole accidentally burned, and so being transformed into malignancy, is recorded by Crocker. Johnston reports cancer developing in a mole on the thigh; another on the back; another on the shoulder, and one on the abdomen. Following injury near the nail, a swelling, dark fluid discharge, pigmentary deposit in the growth—melanotic whitlow.

"Malignant freckle" spot of the foot or leg may end in pigmentary cancer. Melanotic rodent ulcer or melano-epithelioma is another form. Melanoma of the eye has its usual beginning in a choroidal pigmentary spot.

The type of these growths is often impossible to diagnose accurately without the aid of the microscope. Metastases of pigmentary cells are often extensive, the lethal end certain. Early and free surgical removal offers the only cure.

Wilfred Fox considers most cases of melanoma as nevo-carcinoma. Johnston found both types, nevo-carcinoma and nevo-sarcoma. Fox, at variance with Johnston, convicts the pigment of the chief activity in cancerous change.

Cases under X-ray treatment for epithelioma often show partial, possibly complete destruction of the original disease, with extension, or new development of disease in the scar or its borders. Skiagraphic X-ray burns and the burns of X-ray workers have time and again gone on to epithelioma and death. McLeod's case of a lupus X-ray scar with cancer forming in its middle is striking.

Suppurative, broken down sebaceous cysts, or even the unbroken cysts, may be transformed into cancer.

A small injury of the tongue from a jagged tooth, and the irritation continued, have sufficed to bring on cancer

of that organ. A similar development may follow a syphilitic gumma. So with leukoplasia, the white spots and bands called "smokers' patches." In the same way may constant irritation of a tonsillary, pharyngeal or esophageal lesion terminate. Many cases of cancer of the stomach follow an ulcer; many of the gall-bladder succeed erosions from biliary calculi. Ovarian cysts may so degenerate. Uterine myoma is not always benign. Cervical scars from old lacerations frequently form the starting point of cancer. Leukoplasia of the vulva often undergoes malignant change.

No adenoma of the breast is safe to leave in its place. The cicatrix from abscess of the breast has been sufficient to furnish the origin of cancer. Paget's disease of the nipple, possible to be confused with eczema, is usually cancerous in nature and progression.

Sufficient examples have been given and time and space are already too far exhausted to permit of an extension of the list. In unnatural lesions and growths, in scars and irritated erosions, in parts subjected to continued injury, we have a loss of cell balance, an absence of normal restraint, and the scene laid for the entrance of the unknown element that determines the onset of carcinoma, sarcoma or endothelioma, all malignant.

To urge upon people the dangers in lesions and growths not yet malignant will often be of no avail. In many cases the malignant change may never take place, but every effort should be made to cure irritated lesions and remove irritant agents in the simple cases; and no growth certainly progressing towards cancerous evolution should be left untreated. Upon the slightest occurrence of symptoms tending to these changes, instant and thorough treatment must be instituted. Often the simplest erosion, smallest scirrhus or most minute irritated mole or other

growth may liberate cells that wander away to form metastases of the most formidable character. It is proper to watch some cases without interference, and criminally negligent or ignorant to advise the patient to "let alone" any lesion or growth already showing signs of malignance.

I have used the term "cancer" in its broad sense, to cover all types of growth whose tendency is to progression, insidious diffusion, recurrence after treatment, certain death without treatment, often death in spite of treatment.

The following cases illustrate some of the results referred to above:

Case No. 1.—Mr. Q., age fifty-nine. Razor cut in large flesh-colored mole, left cheek, eight months before. Microscope showed epithelioma. Excised. Permanent recovery.

Case No. 2.—Mr. C. Fungating and eroded pigmentary lesion top of left shoulder. Dark mole there for years. Irritated by suspenders. Got well after prolonged caustic treatment and protection.

Case No. 3.—Mr. M., age sixty-six. Diag. Melanosarcoma of dorsum of right foot. Forty years before, a pin-head diameter, black dot just to right of great toe's extensor tendon. Slow peripheral growth for twenty-five or thirty years; then increasing, especially rapidly in past three or four years. When seen, a lesion two by two inches. Various shades and degrees of pigmentation, brown to black or bluish. Some thickening and in parts finely papular. Burning sensation when warm in bed. Declined excision. Received no treatment. About a year later part of patch elevated, exuding serum, and still no metastasis, but he died within a year or two of general diffusion of disease.

Case No. 4.—Mr. A., age seventy-seven. More or less epitheliomatous trouble fifteen years. Skin of face, neck and hands shows many scaly points and spots and scars of excisions, etc. When seen a fungating epithelioma left zygo-malar region and growing to bones beneath. Right maxillary another large one. On left lower eyelid, a small hard epithelioma with erosion and crusting. Treatment purely palliative. Case incurable. Cases like the above and the one to follow, the more numerous in records.

Case No. 5.— Dr. ——, age fifty-three. Usual florid type. Following scale-crusted lesion left cheek, a typical cutaneous horn. Beneath—an epithelioma, surrounded by greasy scales. On nose end waxy sebaceous accumulations, with flat epitheliomatous development in a small colorless mole present for years. Caustic potash treatment.

Case No. 6.—Mr. ——., age sixty-two. Prepuce long; had never been retracted. Fungous epithelioma, cauliflower like, of glans. Urinating through a crevice in side of mass. Inguinal glands small, hard, hyperplastic. Patient refused to permit their removal. Amputation of penis; one inch stump. Well and at work at last report.

Case No. 7—Mrs. W., age forty. Discord epithelioma right side of tongue from tooth erosion constantly kept up. Thoroughly destroyed with paquelin point. Well at last report, three or four years later.

Case No. 8.—Mrs. S., age forty-two. Jolt of car, bit right side of already tender tongue. In three months extensive involvement of side of tongue and glands of neck. Tongue lesion not benefited by X-rays. Neck disease gave way, but patient died after three more months, of exhaustion and a hemorrhage.

Case No. 9.—Mr. G., age fifty-two. Several months

before consultation pinched lip with pipe-stem. Pin-head lesion followed; patient often picked it off; each time it returned larger, finally ulcerating. Typical epithelioma right half of lower lip in carmine border. Early involvement of submaxillary glands. Case aggravated by patient's use of some caustic paste. When first seen, over half lower lip down to gum destroyed; involvement of right oral angle, massive metastasis to lymph glands. From the first he refused all operative treatment. He died in about twelve months from beginning of disease.

Case No. 10.—A case of a married woman under forty, three months pregnant. Papillomatous, becoming cancerous, cyst of right breast. Amputation of breast. Recovery.

Case No. 11.—Old woman seen in consultation. Incurable carcinoma left zygo-malar maxillary region. Developed in sebaceous cyst of many years standing.

Case No. 12.—Mr. C., age sixty-nine. Sarcoma of right shoulder girdle, developed three months before in dark mole over right scapular spine. Rapidly grew in three or four weeks to size of small orange. Doctor excised. Recurrence and gradual involvement of whole shoulder and the axilla. Died within six months.

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DISCUSSION ON DR. HUTCHINS' PAPER.

A Member: I consider this paper of as much importance as any that I have heard at this meeting. I have had a woful experience with cancers, especially cancer of the uterus. I am confident that a large percentage of the

cases of cancer of the uterus are caused by some lesion or tear of the os.

In regard to skin cancer, or epithelioma, I have had good success in treating such cases with butter of antimony. I have the patient apply it in the beginning, or in any form of skin cancer the patient is instructed to take a bottle stopper, apply it to the place affected, not allow it to run all over the sound tissue. He is instructed to apply it every third day, but not to allow any water to go in the spot during the treatment, and I have had good success in getting rid of this kind of cancers.

Dr. Wills: I would ask the essayist if he advises the removal of moles from the skin as a preventive of their development into epitheliomas?

Dr. Hutchins (in closing): Referring to the remarks made by the first gentleman concerning the use of butter of antimony in these cases, I will say that the whole principle of the treatment of epithelioma simply gets down to the matter of destroying the disease; I do not care how you do it. Of course, we will do it painlessly, if possible, which is the best way. Caustic potash, by leaving it open in the bottle until it deliquesces, is the best treatment. It only needs to be left open for five or ten minutes.

REPORT OF FIVE CASES OF FRACTURE OF FEMUR, WITH REMARKS ON TREATMENT AND AN EXHIBITION OF MECHANICAL EXTENSION APPARATUS.

By J. N. DOWNEY, M.D., Gainesville.

Case 1.—F. H., white, male, age eleven years, caught under a falling tree, received a fracture of the middle third of the femur; the case was treated for eleven days by Buck's extension apparatus by another physician. When I first saw the case the limb was found one and three-fourth inches short, with an inch and a half curve. Patient was anesthetized and limb reset; it was then placed in a double angular plaster of paris splint for five weeks; the result was symptomatically perfect.

Case 2.—J. J., white, male, age nineteen; struck by a flying timber during the cyclone; received fracture of the right femur two and a half inches below the trochanters; fracture was set and a double angular plaster of paris splint was applied, and was removed on the forty-fifth day; results good, no appreciable deformity; X-rays showed bones slightly out of line.

Case 3.—A. T., white, male, age four years; struck by a piece of timber during cyclone; received a double fracture of the left femur; one two inches below the trochanter, the other at the junction of the middle with the lower third; the limb was placed in position and fracture

set, and a double angular plaster applied; removed on the forty-second day; results anatomically perfect.

Case 4.—N. H., white, female, age forty-five; fell down a flight of stairs and received a fracture of the neck of the right femur; limb was placed in position, and under a slight traction a double angular plaster splint was applied, which was worn for sixty days, when it was removed; measurement and comparison showed both limbs the same length. On examination two months later the limb was found one and a half inches short; the X-ray showed separation of fragments, with supposed ligamentous union; the patient walks fairly well without a crutch.

Case 5.—Mrs. J. W. O., white, female, age seventy-four; caught toe of her shoe under a rug and fell on the floor; received a fracture of the neck of the right femur; Drs. J. B. and H. L. Rudolph and K. A. Smith saw this case with me; the shock was so profound that at first we thought it useless to apply any splint at all for fear of hastening the seeming approaching end, but after some consultation we decided to make the attempt, watching the results; she was placed on a special table devised by myself for fractures of the femur and a double angular plaster splint hastily applied; she was put back in bed and a few hours later showed signs of returning consciousness, and on the fourth day sat up in a chair two hours, and every day thereafter from three to eight hours; plaster was removed on the forty-second day, but patient not allowed to use the limb at all until the sixty-fifth; at this date both limbs were exactly the same, and patient walking with crutches; now, at the eighty-eighth day, there is still no shortening, and patient walking well.

Cases 1, 2, 3 and 4 were all allowed to move in any desired position after the plaster was thoroughly

dried; to get out of bed to stool from the first day; sit upon a chair and walk with crutches as soon as they felt inclined to do so, which in none was later than the tenth day.

These were all cases of simple fracture, and of interest only as to treatment, comfort and liberty of the patient and the final results. The treatment was as above stated in all by the double angular plaster method; as this method of application of the plaster of paris has not as yet been used by many of the profession, it might not be out of place to say a few words as to the method of application. The first step is to flex the limb at knee and hip to a point of nearest natural muscular relaxation; the splint is then applied in the usual way, except in two or three sections, as may be necessary or desired. When two sections are used after flexing and placing limb in position, the lower section is applied first; beginning at the base of the toes, going up the limb in usual way and making the angle at the knee and stopping near site of fracture; allow patient to rest a few minutes, and plaster to set firmly; then make the necessary extension and counter-extension to bring the fragments in apposition; then apply the upper section by beginning where the lower one stopped and going up in the usual way to the ensiform cartilege; the patient is made more comfortable by carrying the cast well up over the lower border of the ribs; when three sections are necessary or desired the lower and upper sections are applied first, and allowed to set, leaving several inches bare at site of fracture; then make your extension, adjust the fragments and apply third or middle section, reinforcing at both welding points by a few extra turns of plaster roller; when this has set firmly, patient is placed in bed until the plaster is thoroughly

dry; when he may move in any desired position at will. In this cast from toes to ensiform cartilege every muscle connected with the movement of this limb is fixed so there can be very little muscular contraction; with very little assistance he can get out of bed; the limb being in almost a natural sitting position, he can be made comfortable in a chair; having two angles, it is impossible for eversion or inversion of the foot to occur; these angles serve further as points of fixation and prevent shortening, and further draws the limb out of the way in walking with a crutch, so the only drawback is that it must be watched to see that swelling of the limb does not occur to the extent of obstructing circulation; should such an event be threatened, lay the cast open and apply a roller bandage, and we still have the nearest an ideal comfortable appliance that has hitherto been devised for such fractures, as it gives the patient the freedom of any desired movement without pain or self-injury and takes from him all the horrors of confinement in bed for six or eight weeks, and if properly set insures good results with the least worry to the physician.

APPENDICITIS—GENERAL OBSERVATIONS—STATISTICS TO DATE.

By FLOYD W. McRAE, M.D., Atlanta.

It is my intention to present very concisely my experience with this most treacherous of surgical diseases, together with some deductions as the result of my work and observations.

I have had prepared with great care by my assistant and coworker of several years, Dr. L. S. Hardin, the statistics of all cases of appendicitis operated on to date.

I am greatly indebted to Dr. Hardin, not only for these statistics, but also for the valuable and accurate records which he has compiled and kept of my surgical work. But for his valued help I could not present here a record of my work of sufficient accuracy to be of assistance to the members of this Association in making reasonable deductions therefrom.

The suggestions that I shall make and the deductions that I shall submit are the evolution of my experience and observation up to this time, and I reserve the right to change any or all of them as further progress demands.

I hope none of us will ever arrive at that station in medicine and surgery that stops all further development, viz., a feeling of satisfaction that in doing one's best, one is doing the best.

DIAGNOSIS.

It is not my purpose to enter into the diagnosis of appendicitis, other than to call attention to a few of the more important features.

As my opportunity for observation of abdominal diseases has increased, my respect for diagnoses of "colic" and "acute indigestion" has steadily decreased. Marked or persistent abdominal pain means some definite pathology, susceptible of positive determination by accurate, scientific methods of examination.

That we can not always be sure of what the trouble is, I fully admit, but we can, at least, in such cases be honest enough with ourselves and our patients to say so and not lull them into a state of false security by a diagnosis of "colic" or "acute indigestion." I have been impressed with the number of deaths from "acute indigestion" reported recently in the daily papers. These reports simply mean that some one has blundered.

The cardinal diagnostic points are pain, general or local, muscular tension on light palpation, tenderness on deep palpation, with or without an appreciable tumor.

TREATMENT.

I wish here to reaffirm with increased emphasis what I have so often said before, that appendicitis is first, last and all the time a surgical disease, though not always under all conditions an operative one.

Early diagnosis and prompt surgical intervention in all cases would reduce the mortality of this dreadful malady to less than 2 per cent.

In no other tissue does pathology develop so rapidly. These manifestations of fierce virulence are simply astounding, and can scarcely be believed by those unfamiliar with the disease.

Operation.—I have great respect for the abdominal wall, and it has been and is my constant endeavor to preserve its integrity and prevent post-operative hernia. It is so easy to leave conditions that must eventuate in ventral hernia, an exceedingly difficult thing to correct.

A direct incision through all the layers, severing as it does not only the lateral abdominal muscles, but the branches of the eleventh and twelfth dorsal nerves that innervate the rectus, if drainage must be left, induces hernia in quite a large per cent. of cases.

Walling Off—Toilet.—Another point of great importance is packing round the infected area to prevent spreading the infection to the healthy peritoneum. Experience has proven that local toilet or limited infections is far the safest.

Drainage.—Properly placed cigarette drains are real life preservers. In dealing with colon bacillus or other intestinal sources of infection, when in doubt, drain. The converse is true of pelvic infections.

After-Feeding.—Much suffering, prolonged convalescence, or even death, may be prevented by proper diet. I allow only water for first twenty-four hours, then albumen, broths, etc., for forty-eight hours longer, gradually and guardedly increasing light articles of diet, excluding milk and eggs.

I supplement with rectal feeding whenever necessary.

Detention in Bed.—Even after an ideal McBurney operation and healing, I keep my patients in bed two weeks.

Where drainage is left, I keep them in bed till healing is complete,—usually three weeks, often longer.

Peritonitis.—Frank Park, nine years. Three days before operation, marked pain began in abdomen; subsided on second day to begin again that afternoon with increased intensity, and so continued until operation on third day.

Dishwater fluid escaped when abdomen opened; intestines matted by plastic lymph; appendix sloughed off at cecum, and cecal opening closed by plug of necrotic tissue. Five to ten feet of collapsed intestine removed, when dark area of two or three feet was found, adhesions causing

obstruction, color returned after application of hot sponges. Died twelve hours later.

Will Rau.—History similar to above. Through and through cut to peritoneum; black peritoneum bulged into wound on opening same, each movement of intestines caused foul dishwater material to flow out. Appendix was post-cecal; ruptured and necrotic in places.

Abscess.—Miss A. D. H., thirty-nine years. Intestines matted in right half of abdomen and mass extending transversely to vertebræ, midway between umbilicus and symphysis. This opened and liberated foul colon-bacillus pus, which had dissected beneath mesenteric attachment; traced to right, passed behind cecum, where a pus pocket contained necrotic appendix in pieces; some pieces sloughing tissue removed. Counter-puncture made.

Revier, Rochelle, Wilson, Fitzgerald.

Septic Nephritis.—Prof. E. R. First attack acute appendicitis, with septic nephritis. Appendix found gargrenous and ruptured at its middle. Each kidney was punctured and drains left.

Marked epistaxis on first and second day; some bleeding on removal of appendical drain, and from each kidney when drains removed. Died on fifth day.

Septic Cholecystitis.—Sam'l J. Sl. Sixty-seven years. Abdomen distended and tight. All of right side boggy from ice applications. Appendix found markedly congested, and with some adhesions. Gall-bladder contained four stones and five or six ounces black septic material. Drained. Many hyaline and granular casts.

Abscess.—Mr. McD. Forty-nine years. Was subject of protracted sprees since a boy; had several pulmonary hemorrhages. Was taken in a drunken debauch, and operated upon the fourth day. Small local abscess opened

and appendix removed. Had an alcoholic gastritis, and vomited until death.

W. T. C.—Abdominal pain and nausea for a week, but remaining up and about until three days before operation, when pain became so severe. Operated June 1. Abdomen flat; foul-smelling pus cavity opened and floating appendix removed, and opening in cecum left. Much mealy fluid escaped on second day; free fecal discharge from wound—wound becoming necrotic—and a diarrhea which continued until death thirteenth day.

Was very superstitious, saying from the first he was going to die. Two brothers before died, each giving up from beginning of sickness; one typhoid, one pneumonia.

Influence on Longevity.—The absurd statements made by supposedly intelligent and well informed people that removal of the appendix shortens life needs only to be met with facts. Not one scintilla of evidence has been or can be brought to sustain such a statement.

All evidence gathered by insurance companies and medical men proves that the chance for long life is enhanced by appendectomy; in other words, the danger of death from appendicitis is eliminated.

APPENDICITIS RECORD TO DATE, APRIL 16, 1906.

	No.	Deaths
1 Acute, 1st attack; operating during attack.	12	1
2 Interval, operating after one attack	16	
3 Acute (oper. during attack) chronic relapsing	7	
4 Acute (oper. during attack), chronic recurring	6	
5 Interval (oper. during interval), chronic relapsing	139	
6 Interval (oper. during interval), chronic recurring	40	

		No.	Deaths
7	Unclassified, belonging to the above six headings	18	
8	Abscess (operating during interval)	12	
9	Abscess (operating during attack)	42	6
10	Beginning general peritonitis	29	3
11	Consultant (no record).		
12	Consultant, surgeon (no record).		
13	Appendices removed during other operations: class 2	1	
	class 3	2	
	class 5	21	
	class 6	10	
		355	10
			2.8%

May 10, 1903. Transverse Incision 31 Cases.

Total deaths	10	Cases 355	
Deduct septic nephritis (Class 1)	2	2	
" " cholecystitis (Class 10)			
	8	353	-2.27%
Deduct beginning general peritonitis	2	29	
	6	324	-1.8%
Deduct acute abscess (delayed cases)	6	42	
	0	282	-0.0%
	Cases.	Deaths.	
Beginning general peritonitis	29	3	-10.34%
Acute abscess (delayed cases)	42	6	-14.2%

Removal of appendices; combined operations. Class 1 to 13 of appendix report:

	Class.	No.
Acute intestinal obstruction	1	1
Acute intestinal obstruction	4	1
Gastroptosis—gastro-enterostomy	5	1
Exploratory laparotomy	6	1
Exploratory laparotomy	5	1

	Class.	No.
Caseous deposit in right kidney	5	1
Tubercular peritonitis	5	3
Left inguinal hernia, herniotomy	2	1
Ventral hernia, post op. repair	5	1
Dermoid cysts of ovaries, D. S-O	4	1
Right pyosalpinx, D. S-O	1	1
Double pyosalpinx, D. S-O	5	2
Double pyosalpinx, D. S-O	13	1
Cholecystitis, drainage	5	1
Gall stones and adhesions	5	5
Gall bladder adhesions	5	2
Gall bladder adhesions and perforation into duodenum	5	1
Nephropexy, right	5	7
Nephropexy, right	6	2
Nephropexy, right, and trachelorrhaphy	6	1
Nephropexy, right and cystic ovaries	5	3
Nephropexy, right and cystic ovaries and trachelorrhaphy	5	2
Ovarian cyst, S-O	6	1
Cystic ovaries, resection and suturing, or S-O.	2	1
Cystic ovaries, resection and suturing, or S-O.	6	2
Cystic ovaries, resection and suturing, or S-O.	5	12
Cystic ovaries and intestinal adhesions—tubercular	5	1
Cystic ovaries and retroverted uterus	5	2
Cystic ovaries and hemorrhoids	6	1
Cystic ovaries and double hydrosalpinx—tubes resected	5	2
Sclerotic ovaries. Morph. habitue, D. S-O.	6	1
Prolapsed ovary; retroversion, R. O. oophorectomy	5	1
Perineorrhaphy	5	1

	Class.	No.
Perineorrhaphy and cystic ovaries	5	1
Perineorrhaphy and cystic ovaries	6	1
Perineorrhaphy and trachelorrhaphy	5	2
Trachelorrhaphy and cystic ovaries	5	3
Trachelorrhaphy and cystic ovaries and ventro-fixation	6	1
Fibroid of uterus, cystic ovaries, and fissure in ano	5	1
Fibroid scirrhous ovaries, and double hemo-salpinx	5	1
Ectopic pregnancy	5	1
Pelvic abscess	5	1
Curettement	5	1
Curettement and hemorrhoids	2	1
Acute cholecystitis and genl. peritonitis	10	1
Retro-peritoneal abscess	9	1
Acute nephritis; Edebohls	1	1
		82

S-O, Salpingo-Oophorectomy. R, right, D, double.

VAGINAL SARCOMA IN AN INFANT SEVENTEEN MONTHS OF AGE.

By O. L. HOLMES, M.D., Covington.

The case here reported was first seen on the 17th of June, 1903, having been referred to me for treatment by Dr. A. W. Shaw, of Monticello, Ga.

The following history was elicited from mother:

Parents healthy; child age seventeen months, female; has had no serious illness; in the preceding February had a fall, after which it was fretful; about three weeks after fall noticed that there was a slight pale reddish vaginal discharge, and child became very anemic, the discharge increased, and began to have a slight disagreeable odor; slight pain on micturition; bowels inclined to be constipated; about April noticed that there were small masses expelled from vagina after child strained at defecation; had been treated with vaginal douches and tonics with no improvement. The child presented an extreme anemic condition; temperature 101, pulse 130, and soft; was fretful and had difficulty on micturition, and bearing-down pains on defecation; a mass about size of a small orange presented itself above symphisis reaching near the umbilicus, soft and fluctuating; slight vaginal discharge, pinkish in color, and some odor; no vaginal examination made at time; was prepared for operation on the 22d of June; after anesthetized a digital examination of vagina attempted; the vagina was found filled with a soft, friable,

gelatinous, vascular mass, which curetted away with the finger, and about four to six ounces of a reddish gray material was removed, some odor; the infantile uterus could be felt, and did not seem to be involved, the tumor apparently springing from the anterior wall of vagina; after relieving this condition, about four ounces of urine was passed involuntarily and the abdominal tumor disappeared; the vagina was irrigated with a one to eight thousand permanganate of potash solution was packed with iodoform gauze. The child rallied from anesthetic nicely.

The gauze was allowed to remain for three days, when it was removed, and was found to be saturated with a sero-bloody discharge.

The irrigations were ordered daily, and child placed on tonic treatment. It improved in every respect for about six weeks.

About August the first mother noticed that the discharge was returning, and was of a very foul odor, and difficulty of defecation and micturition returning.

It was returned for treatment on the sixteenth of August and a second operation was done, and about three ounces of the same character of material removed, only odor was more offensive.

A specimen of this was sent to Dr. Claude Smith, of Atlanta, for a report on it. He reported that it was a specimen of sarcoma of the round cell variety.

Child improved for a short period after second operation, but soon relapsed and was returned and operated on three different times between the first of September and December, when death resulted.

The growth returned rapidly after each operation; the temperature during the course of trouble was intermittent in character.

The child at time of death presented a general anarsar-

cic and pyemic condition, death resulting from uremia and septicemia.

No autopsy allowed.

In connection with this case, I wish to present the reports and discussions of similar cases on record. Most authorities agree that it is of rare occurrence.

Dr. Wrede, in 1903, reported a case in a child 21 months of age. It had shown at first symptoms of fever and anorexia, later a small cauliflower growth was found protruding from vagina. It was removed by ligation, but recurred in two weeks. Repeated operation, tumor continued to grow, and finally became associated with cystitis, and continued fever before death, which occurred about twelve months after first seen.

It was found to be a round and spindle cell sarcoma.

C. H. Frick, in 1888, reports two cases. First, age seven months, presented a tumor, pale, smooth, size of walnut, no symptoms of pain, hemorrhage, or discharge. Operation, removal of tumor from right anterior vaginal wall; rapid recurrence and death.

Was found to be a round spindle cell sarcoma.

Case second, age two years, tumor size of walnut, originating from posterior vaginal wall near vaginal entrance; operation, recurrence; second operation, tumor same character as first, that is, cylindrical, round and spindle-shaped cell.

Child recovered, and was well three years after second operation.

Piechaud and Guyot, in 1901, reported a case of primary sarcoma in an infant two years of age. Tumor protruded from vagina, and gave rise to serious hemorrhage. Diagnosis of primary sarcoma of vagina. Inoperable on account of size. Autopsy revealed a general-

ized, suppurating peritonitis to have been direct cause of death.

Tumor originated from posterior vaginal wall, anterior wall was congested without ulceration. Uterus was not connected with tumor.

Dr. Schuchardt, in 1888, cites several cases, two under his care.

First, age seven months, tumor, smooth, pink, hazlenut size, at vulva, grew rapidly, difficulty on micturition and defecation. Tumor removed, composed of button-like polypi like bunch of grapes, microscopical findings round and spindle cell sarcoma. Child died five months after operation from recurrence.

Second case, age two years, six months, had pertussis lasting six to eight weeks. Tumor first noticed at that time, some pain and hemorrhage, tumor removed; microscope showed round and spindle cell sarcoma.

Tumor recurred seven months later and was removed again, tumor same as first; no recurrence when last heard from.

M. Sanger, in 1880, reports a case in a child three years of age.

Two pedunculated polypus growths projected from vulva size of small grape, soft consistency and pinkish color. Tumor apparently attached to left lateral wall of vagina. It was suppurating. Operation, removal of portions of tumor. Radical operation not advisable; tumor was a typical round cell sarcoma. Child returned in two months with a recurrence; result, death.

Autopsy showed general anasarca and anemia. Acites, accompanied by suppurative peritonitis. Large sarcoma of anterior vaginal wall. Isolated polypi of posterior wall perforating abdominal cavity. Dilation of bladder and ureters.

A. Kolisko reports three cases in 1889. First, age eighteen months, died two weeks after admittance to hospital from polypus, vaginal sarcoma.

Autopsy showed anemia of internal organs, nodular tumor of vestibule, infiltrating vagina, urethra, base of bladder and cervix uteri, followed by cystitis, pyelitis and pyelonephritis and pyometra, anemia and sepsis; microscope showed myo-fibro sarcoma.

Second case, age twelve months, tumor protruded from left of vulva, presented a number of large and small polypi. Repeated operation with rapid recurrence after each, finally death about six months after first noticed; microscope showed round and spindle cell sarcoma. Neoplasm originated in left vaginal wall, infiltrating rectum and vagina. Retention of secretion due to polypi caused pyometritis and suppurative peritonitis, causing death.

Case three, age eighteen months, admitted to Bilbroth's Clinic in 1875. Tumor protruding from vulva about one month before admittance. No symptoms for two weeks. Vagina long. Removal. Improved, but vagina became filled with vegetation after operation; result death.

Autopsy, neoplasm originating in anterior vaginal wall, tumor grew to size of walnut in six weeks; microscope showed myo-fibro sarcoma.

Kolisko also gives abstracts of eleven cases of sarcoma in children and concludes his paper, giving his opinion that only early and radical extirpation of primary tumor justifies one to hope for a successful issue.

Dr. A. Power, in 1895-6, reports a case, age two years four months, admitted to hospital for retention of urine caused by tense swelling of vagina, said to date from measles fourteen months previous. Five months before admittance noticed small polypi projecting from vulva; died with symptoms of uremia.

Autopsy, tumor projecting from right wall and most prominent in upper part of vagina, whole mucous membrane of vagina studded with hundreds of polypi size of pea, adjoining organs congested; microscope shows healthy condition of serous and muscular coats of vagina, sub-mucous connective tissue soft and gelatinous, filled with numerous small cells, the denser polypi of vagina are round cell sarcoma with a great deal of fibroid tissue.

He cites twenty-four cases collected from various sources. They are characterized by formation of numerous polypi resembling clustered grapes which arise from the walls of the vagina, malignancy usually local only. Treatment unsatisfactory, repeated currettings give temporary relief, most cases fatal in from one to two years after onset of symptoms.

Rabe, in 1902, reports a case six months of age, which had symptoms of intermittent pain, accompanied by frequent and difficult micturition. Upon examination found a tumor size of a small nut, reddish in color at site of vestibule. It involved the urinary meatus, diagnosis sarcoma. Removal of uterus and vagina per laparotomy. Death from broncho-pneumonia.

Strassman, in 1899, reports case, eighteen months. Suffered for about four months previous to examination from hemorrhage and foul-smelling discharge from vagina. Pain on micturition, no fever, partly gangrenous tumor was projecting from vagina. Curretted and tamponed with iodoform gauze; microscope showed large round and spindle cell sarcoma. Proposed to remove vagina and uterus per sacrum, gives no results.

Dr. A. W. Lee, in 1901, reports a case of primary sarcoma in a child two and a half years first seen in 1899; watery and bloody discharge had been observed for some

months previous, several polypi projected from vulva. Around vaginal and urethal entrance numerous growths of firm consistency.

Elastic tumor felt in abdomen reaching to umbilicus. Vagina dilated and filled with soft growth, many pedunculated, recto-vaginal and vesico-vaginal walls involved; microscopical findings, sarcoma. Died in thirteen months after first seen.

E. H. Starfinger cites a case reported by Steinthall, child two years, duration of disease twelve months. Tumor removed after eight months' duration. Recurrence in eight weeks. Death six months later from uremia. Tumor originated from anterior vaginal wall. Microscopical findings, round cell sarcoma.

He also reports a case, age eighteen months. Duration of disease six months, first seen in sixth month of disease. Soft, friable tumor occupies whole of posterior vaginal wall. Removal with currette, tamponed; death in three weeks. Microscope showed large, round and spindle cell sarcoma.

Hesterman cites a number of cases by other authors, among them:

Dr. March, child two years seven months, tumor on anterior vaginal wall, polypi growth, metastasis on posterior wall of bladder. Course of disease six months. Operation; seven recurrences, death.

Case by Sathman, age two years six months, tumor on anterior wall of vagina, base size of a dollar, polypi growth protruding from vagina. Small tumor also in posterior wall of bladder. During course of disease experienced difficulty in walking, painful micturition, intermittent fever and hemorrhage. Operation; recurrence, death. Microscope, round cell sarcoma.

Case by Hauser, child aged twelve months, tumor on

anterior vaginal wall towards right. Microscope, round spindle cell sarcoma. First symptom at six months of age. Operation; recurrence at short intervals, death.

Dr. B. Brown presented a sarcoma of vagina in a child three years old to the Gynecological and Obstetrical Society of Baltimore, and Dr. Kelly, in discussing it, said: "They begin as more or less irregular flat, sessile tumors in the anterior wall of vagina. They occur usually in the very young. In two cases tumor appeared to be congenital. They are found in the majority of cases on the anterior wall. They do not spread by metastasis. The metastasis being local, or only a short distance from the area of infection. In another respect they are peculiar, in that they contain straight muscular fibres."

Dr. Munz discusses the occurrence of sarcoma in children and adults and says: "The majority occur between six months and three and a half years. Prognosis grave, disturbances produced are slight in beginning, but soon become serious. Recurrences always follow operations from several weeks to two months after operation. The recurrent growths have same character, only they grow more rapidly and degenerate sooner than the primary tumor. Average duration about twelve months. Treatment is operative always. Life is prolonged, but death finally results." In addition to the above statements, we may add that they are composed principally of round and spindle-shaped cells.

In closing this paper, I wish to thank Major McCaw, Surgeon-General U. S. Army; Dr. Charles A. Pfender, of the U. S. Army Medical Museum, of Washington, D. C.; Dr. Claude Smith, of Atlanta, Ga., and A. W. Shaw, of Monticello, Ga., and Mr. Lamar, of Covington, for valuable assistance.

The authorities quoted herein will be found on record in the United States Army Medical Museum Library.

ANTIPYRESIS AND ITS FEASIBILITY.

By REMBERT H. THIGPEN, M.D., Augusta.

METABOLISM.

Animal protoplasm, a highly complex organic molecule, depends for existence upon metabolism—upon the assimilation of elements represented in its structure, and the liberation of radicals whose formulae have, through chemical alteration physically produced, lost the valency of union. A veritable citadel, then, of continuous molecular change is protoplasm. So long, however, as assimilation equals expenditure the quality of the compound remains unaltered; when expenditure outstrips assimilation, the course is clearly that of exhaustion. Again, the quality of protoplasm is perverted to the extent of any heterologous radical that disease may cause to be appropriated. Complete exhaustion differs from dissolution in that the molecule in the latter instance is rapidly torn asunder through the exceeding valency of its component radicals for a foreign agent.

Like animal protoplasm, the vegetable organism represents a highly complex organic molecule, and the same conditions govern its existence. An important exception, however, is derived from the fact that the organism never being put to physical wear, its molecular change is always a phase of dissolution; so long as the agent with exceeding valency is not applied, no molecular change occurs.

COMBUSTION.

Digestion is periodic, but assimilation is continuous, and fluctuates according to demand, i. e., according to the quantity of katabolic radicals exertion is causing to be liberated through its physical alteration of their formulae. These radicals are not excreted in their nascent form; oxyhemoglobin loses its oxygen to their greater valency and combustion obtains. The result is summed up in excrementitious matter on the one hand, and deoxygenated blood on the other.

TOXIGENESIS.

When animal protoplasm and the vegetable organism are brought in contact, each contributes one or more radicals to the formation of a new molecule—the *toxin* whose constituent radicals are of sufficient valency to have effected their severance from the original compounds, leaving the progenitors in an altered condition varying in extent from slight lameness to absolute dissolution, depending upon the importance to the structure of the radical lost, and upon whether assimilation will effect readjustment. When the process is sufficiently active to demand an extraordinary supply of assimilative material, reflex congestion occurs and the sum total of phenomena is styled irritation.

TOXEMIA.

Toxins are readily soluble and pass into the general circulation, where a second chemical change is undergone. Radical "A" of the toxic molecule is appropriated; radical "B" remains free in the circulation. (A complex organic molecule is separable into radicals dissimilar in formulæ to those that originally effected the compound.) Protoplasm appropriates radical "A" at the

expenditure of one of its own constituents; the latter is promptly combusted—so much dissolution being imposed upon oxyhemoglobin. The total exchange finds radical "B," heat and deoxygenated blood free in the circulation; and further, the perversion in protoplasmic quality that radical "A" has installed, and the degree of exhaustion that katabolism has incurred. It remains for us to consider the physiological action of these factors and to estimate the significance of their cast—exhaustion.

HEAT.

The thermic nervous apparatus governs the volume of protoplasm. Stimulation of the *genetic* center produces molecular expansion; the atomic continuity becomes lax, and exchange easy. When extreme the slightest alteration in the formula of a katabolic radical may anticipate its greater valency for oxyhemoglobin. The amount of heat, then, depends upon the extent of katabolic prematurity, while the latter in turn depends upon the degree of molecular expansion. Stimulation of the *inhibitory* center, by contracting protoplasmic volume obviously renders exchange difficult; indeed, if the stimulation be sufficient, complete suspension of metabolism may result—heat generation falling to zero. When fully stimulated, inhibition may mask the genetic action, but the influence does not reach so far as to prevent the liberation of a katabolic radical that has reached its maturity. A third heat center—the *thermolytic,* whose function it is to facilitate heat dissipation, acts through the circulatory medium by depressing the cardiac and vasomotor centers. Heat dissipation implies "radiation" and "evaporation." Direct abstraction results from mechanical application.

Heat depresses the cardiac muscle direct, the cardiac, vasomotor, respiratory and thermoinhibitory centers. It

therefore facilitates its own dissipation, and increases heat formation. The latter it does, first, by paralyzing opposition to the genetic, and, second, by the fact that under its direct influence protoplasmic volume expands whence metabolism becomes chaotic to the furtherance of exhaustion. It is salutary only in that it provides deoxygenated blood (vide infra). The latter, then, is purchased at a ratio of exhaustion, the extent of which determines a limitation to the salutary scope of fever; in fact, fever would at no stage be salutary if metabolism could be suspended with some nondepressant agent, because such procedure would not only preserve protoplasm, but would preclude the presence of radical "B" and heat in the circulation.

DEOXYGENATED BLOOD.

Blood deprived of oxygen is by irritation excitant to the cardiac muscle direct, to the cardiac, vasomotor and respiratory centers, effecting an increased intake and a rapid distribution of oxygen. In course of time, however, this autoexcitation if excessive will, by incurring vast expenditure within the protoplasm of the "means apparatus," bring about exhaustion whereby the means of physical resistance is not maintained. Physical resistance is a comparative term, i. e., the clinician, by consideration of the febrile symptoms, estimates the antagonistic power of deoxygenated blood as compared with the unknown virulency of radical "B;" with the same thought he reckons on the degree of protoplasmic exhaustion necessary to maintain the deoxygenation, which latter information is indexed in the general condition of the patient.

Radical "B" remaining free in the circulation exercises depression upon the respiratory, cardiac, vasomotor and

thermogenetic centers, amounting when extreme to algid collapse. The genetic depression attains prominence only in cases of extreme virulency; the effect is too remote to come in for salutary claim. The respiratory and circulatory depression effects a decreased intake and a faulty distribution of oxygen—combustion being, to an extent, interdicted. It is true that combustion is, in point of time, second to exhaustion, but the presence of combustion increases exhaustion; besides, heat is more depressant than is an uncombusted potion of katabolic radicals, whose premature liberation implies a retained quota of nutritious atoms. Again, the circulatory depression facilitates heat dissipation, and obviously lessens the general blood pressure upon a congested area.

ANTIPYRESIS.

There are three modes of reducing heat: (1) by increasing its radiation and evaporation with circulatory depressants; (2) by abstracting it directly with cold, and (3), by checking its formation with the coal-tar class.

We have seen that exhaustion is the essential harm of fever. Then would thermolytic agents, since the heat they remove occurs only on the afterside of exhaustion, accomplish any material good? The answer is yes, for we have seen how retained heat increases heat and exhaustion. The thermolytic effect, however, of these agents is not announced until considerable depression elsewhere has been wrought—sufficient depression to render the agent impracticable. Exception, however, occurs, as when a heart irritated by deoxygenated blood and heat, and resisted by high pressure, becomes abnormally forceful in its action. By the time the depressant phase of aconite is expended in reducing such a heart to its normal.

the vasomotor effect with its consequent thermolysis is well under way. In sthenicus, then, thermolysis and metabolic rest (especially of the cardiac muscle), are purchased with a depression that is actually, within itself, beneficial. Further, any dose of a vasoconstrictor sufficient to contract the vessels of a congested area, would raise to a fatal height the general pressure; a smaller dose of the same drug would naturally feed with more blood the engorgement. Here aconite would reverse the condition.

Cold.—By the direct abstraction of heat, cold mitigates metabolic agitation, disburdens the thermoinhibitory, cardiac, vasomotor and respiratory centers, and reflexly awakens them from their depression under radical "B."

The Antipyretics.—Under the influence of these agents fever temperature declines, even though thermolysis be checked with atropia; further, the excrementitious output is decreased. (There is a temporary increase, due probably to the transient circulatory stimulation, whereby the blood is purged of the excrementitious matter on hand at the time of administration.) It is probable, then, that their action is chiefly upon the thermic apparatus, and according to their known action upon nervous tissue elsewhere. that the nature is that of depression. The indications are that they paralyze the genetic center, whereby the inhibitory, left unopposed, exercises its contractile power upon protoplasm, whence metabolism is suspended. A proportion of that force (oxygen) which is so instrumental in the removal of the katabolic radical, is otherwise utilized in the oxidation of the antipyretic, by which means it is converted into its active form, thus leaving unmolested a portion of katabolic radicals to their full maturity.

In comparison, the thermolytics necessitate circulatory depression, and even then the metabolic rest is remote. The antipyretics, on the other hand, are antipyretic only by virtue of their power to arrest metabolism, and this they do, even though the circulation be kept at its normal with corrective stimulation. The thermolytics are indicated in sthenic cases, and especially when of congestive type. The antipyretics are indicated, (1) when the comfort of the fevered patient is worth the depression; (2) when the degree of exhaustion demands metabolic rest; they are contraindicated (1) when, as in adynamia, protoplasm is unable to respond; (2) when, by reason of idiosyncrasy, the depression is out of proportion to the degree of antipyretic benefit. In these instances convenience is ignored, and preference turns to hydrotherapy.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

By T. E. OERTEL, M.D., Augusta.

It would almost seem that one should premise a paper upon the above subject with an apology for its presentation. This for two reasons; first of which is, that the necessity for early diagnosis of tuberculosis is self-evident and needs no argument, and, secondly, because of the multiplicity of papers of like kind that are being read before various bodies, both lay and medical, and which appear in popular periodicals, as well as in our medical journals.

But in spite of these facts I do not crave your pardon, but rather claim your earnest attention, while I briefly outline a few of the facts relative to the necessity of early diagnosis of tuberculosis and the chief means at our disposal of arriving at this end.

In spite of all that has been said and written, it is unfortunately true that two classes of people need instruction in this matter. I refer to the medical profession and the people at large.

The medical man must take upon himself the task of educating the public, and unless he be competent there will result the disaster that always befalls when the blind essays to lead the blind.

No one will deny that the best results may be hoped for when tuberculosis is discovered in its incipient stage. No one who has had special experience in the treatment of

tuberculosis, but will sadly bear witness to the fact that in a very large majority of tubercular patients the diagnosis is not made until the disease has advanced to the second and often to the third stage.

In order that I may be intelligently followed, it may be well to define what is meant by the designating of certain stages in the progress of tuberculosis.

There is, of course, no hard and fast line in the matter, and yet it is necessary for us to have some sort of classification.

At the last meeting of the National Association for the Study and Prevention of Tuberculosis the committee on clinical nomenclature presented the following modification of Turban's scheme. The report of the committee was adopted, and the plan laid down by them should be followed in order to obtain uniformity of nomenclature in the United States.

To be used in connection with Turban's scheme of dividing the stages into I, II and III:

INCIPIENT. (Favorable.)	Slight initial lesions in the form of infiltration limited to the apex or a small part of one lobe. No tuberculous complications. Slight or no constitutional symptoms (particularly including gastric or intestinal disturbances or rapid loss of weight.) Slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours, especially after rest. Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent.
MODERATELY ADVANCED.	No marked impairment of function either local or constitutional. Localized consolidation moderate in extent with little or no evidence of destruction of tissue or disseminated fibroid deposits. No serious complications.

FAR ADVANCED. { **Marked impairment of function local and constitutional. Localized consolidation intense; or disseminated areas of softening; or serious complications.**

Acute Miliary Tuberculosis.—Turban uses the terms "open and closed tuberculosis" to indicate the presence or absence of tubercle bacilli from the sputum.

The report of the Massachusetts State Sanatorium for 1904 shows during the past five years a steady increase in the cure of incipient cases, which in the latter year reached 75.8 per cent.; a most flattering result.

I am compelled to quote further from this report, as follows: "When we state, as we are able to in recent years, that between 45 and 50 per cent. of all cases have left with the disease arrested, we are massing all our cases together. When we show that among the cases which seem to be really incipient between 70 and 80 per cent. leave with the disease arrested, it is only a proof of what we are constantly endeavoring to teach, viz.: not to wait until the symptoms are well marked, but to send patients at once, when the first symptoms appear."

These words show us that it is not alone in Georgia that tuberculosis is overlooked until it is well advanced. But in the incipient stage it is seldom recognized with us, especially if still closed. It behooves us to enquire into the reasons for this condition. To my mind they are not difficult to find.

A large number of persons with early tuberculosis have symptoms which are slight, which are attributed by them to things of less moment, and for which they do not consult the family physician until some more than usually severe exacerbation causes them to become alarmed and to seek medical advice. This is one very important reason why the disease is not sooner detected in many in-

stances. For this condition there can be but one remedy, and that is the education of the general public relative to the question of tuberculosis. This subject is quite beyond the scope of the present paper, and must be dismissed with only the further statement that it devolves upon ourselves to so educate the public.

The other reason why early tuberculosis is so often undiscovered is quite as evident, and concerns us directly. I desire to be clearly understood, and I wish every doctor in Georgia were within the sound of my voice. This other reason is *the incompetency of the doctor.*

Do you consider, gentlemen, that this is a hard thing to say? I am ready to admit that it is not a *pleasant* thing, but I am ready to maintain that it is a *true* thing, and if I am correct in this, then it is high time that we set about altering such a condition.

You all know that tuberculosis kills more people than all other contagious diseases combined, excluding pneumonia. This being the case, it is the duty of the doctor to exclude tuberculosis in every case where there is a possibility of its being present.

The fact of the general prevalence and great frequency of tuberculosis should be ever before him, together with the further fact that it may present a symptom complex that may prove exceedingly difficult of solution.

I believe, however, that most of the cases of early tuberculosis that are overlooked by the physician are not recognized for the reason that the true condition was not suspected, or, if suspected, a waiting policy was pursued, rather than a vigorous endeavor to probe the question to the bottom. This codliver oil and wait-a-while form of treatment can not be too strongly condemned.

In any case of suspected tuberculosis it is the paramount duty of the attending physician to at the earliest moment

determine the true diagnosis. To calmly wait for a further extension of the pathologic process is *nothing short of criminal.*

Most common among the conditions with which early pulmonary tuberculosis is confounded are malaria and indigestion, with typhoid fever following a good third.

There is no more maligned creature in existence than the malarial parasite. It is no exaggeration to say that in this section fully one-half of the cases of tuberculosis one sees have been erroneously treated for malaria. An investigation of the case according to modern methods of diagnosis should lead to an early recognition of malaria in most instances. It is needless to say that microscopic examination of the blood is of first importance. How often this is done in cases of suspected malaria, I leave you to judge. This is not always possible, perhaps not always necessary I readily admit, but that it is not more generally possible is due to faulty equipment on the part of the general practitioner, who has failed to provide himself with the necessary apparatus and special knowledge that in these latter days he should have.

It will be well, then, to lay down the following dictum: In every case of malaria where the correctness of the diagnosis is not proven by the finding of the parasite in the blood or the immediate recovery of the patient under the administration of quinine, tuberculosis must be considered as a possible causation of the symptoms. Such a course will bring to light many a tubercular infection at a period when, with proper treatment, the patient may recover, when a further delay in a correct diagnosis would have put him beyond the pale of hope.

First again in importance is the microscopic examination of sputum for the tubercle bacillus, because when this organism is demonstrated the diagnosis is settled beyond peradventure.

It should not be forgotten that in early cases it may be necessary to make repeated and very careful examinations before the bacillus is found, and that the patient must be instructed to preserve that material which he raises from the lungs, preferably during the early morning, and to avoid as far as possible contamination of this by saliva or nasal secretion. Above all, should the examination of the sputum fail to show the tubercle bacillus, the physician must not rest in fanciful security. It is in the *closed stage,* when the tubercle bacilli are not in the sputum, that it is of the utmost importance to make certain the diagnosis, and it is in such a condition that the utmost skill of the physician is called into play.

If tubercle bacilli have been found in the sputum, it remains only to determine the location and extent of the lesion; if they be not found, we must determine by other means whether there be a tubercular focus present. The use of tuberculin as a diagnostic measure is often, in selected cases, of great value. It should, however, never be employed except with the greatest care, and usually is not necessary.

In arriving at a diagnosis in a case in the incipient, closed stage one must consider every detail; for only by systematic and careful methods is it possible to attain proficiency and accuracy. We must never lose sight of the fact that a correct diagnosis is of vital and momentous importance to the patient, and our failure to detect tuberculosis in its early stage may cost him his life. On the other hand, a diagnosis of tuberculosis when it does not exist is a serious thing, as it may alter the whole course and future conduct of our patient and debar him from some chosen pursuit, in fact change the entire course of his existence. We must diligently enquire into his family history. If this shows the frequent occurrence of tuber-

culosis in near relations, it furnishes valuable evidence of predisposition to the disease. Age and sex are to be considered, tuberculosis being pre-eminently a disease of youth and occurring particularly in young males. Fifty per cent. of all cases occur between the ages of 18 and 25. Loss of weight may be the first symptom noticed by the patient. He is easily tired and has indigestion and appetite is poor.

The character of the pulse is valuable. In nearly all cases there is either tachycardia or an irritability of the heart, due to toxemia and resulting in a rapid pulse upon slight exertion or excitement so that it may even reach 120 or more, while the temperature is either normal or slightly elevated.

Afternoon rise of temperature, even though slight, 99.5, is of the utmost significance. Often exercise will increase the temperature to or beyond the above degree. In women it has been shown that at the menstrual period there is often a characteristic afternoon rise of temperature, increased pulse rate, and the presence of physical signs otherwise absent.

Hemoptysis is often the first symptom observed by the patient, and may usher in an open tuberculosis which in the closed stage had caused no temperature of especial note.

Cough may and usually does exist early, even before the open stage, and is normally of the hacking variety when dry, which becomes a mere clearing of the throat when expectoration is established.

The signs revealed by physical examination are, of course, of the utmost consequence, but beyond the scope of this paper.

For definite information relative to them I must refer you to the text-books on the subject. The recent work

of Turban is an excellent manual that you will find of great service.

The purpose of this paper is not to present anything new, and it is manifestly impossible and foolish to endeavor in so limited a space to thoroughly review the methods of diagnosis and treatment of tuberculosis. My only purpose is to call attention to the distressing frequency with which cases of pulmonary tuberculosis pass unrecognized until they have become almost hopeless, and to urge the necessity for more careful methods of diagnosis.

We all make mistakes, but it is our duty to make as few mistakes as possible. Some mistakes are excusable, but when human life and happiness is the prize for which we play we can not afford to make even excusable mistakes.

DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS.

By H. F. HARRIS, M.D., Atlanta.

The medical profession has been so often disappointed in the treatment of pulmonary tuberculosis with the ordinary remedies—has witnessed the rise, decline and fall of so many vaunted new specifics for this terrible disease, that it has reached a condition where failure is expected, and the whole subject of the therapy of this malady is regarded with apathetic indifference. To such an extent is this true, that I find we have almost as a whole disregarded and overlooked the really wonderful advances in more recent times that have been made in the treatment of this affection.

The combat against this terrible foe that has placed us in a measurable degree of victory has not been carried on in the pseudo-scientific journals of "bio-chemistry," the morning gazettes of "the newer remedies," or the evening telegrams of the "alkaloidal specifics," nor yet in the daily lay newspapers, one of the special prerogatives which the vast majority of them exercise being the dissemination of misinformation generally, and more particularly on medical subjects. In our own land this seemingly hopeless combat was begun nearly three decades ago in the lonely and, at that time, uninhabited wilderness of the Adirondack mountains of northern New York, a combat to which no admiring onlookers lent applause, as

silent and grim as the icy peaks of the surrounding hills. Here, all alone, a weak and emaciated invalid, himself a sufferer from this frightful malady, struck the first blow in the great fight which has resulted in such unparalleled good to mankind, and which is destined in the future to be of infinitely more benefit to suffering humanity. All honor to Trudeau, one of the greatest philanthropist and physicians of this, or any other time. To him has fallen the happy lot of knowing that thousands are now strong and well, who, but for him, would have long since passed away the victims of one of the most terrible and loathsome of all diseases.

With this great example before us it is our duty to let the world know what can be done to combat the great scourge of tuberculosis, and it behooves us as true physicians to do all in our power to further the great ends that have been already so nobly striven for.

In order that this may be done nothing is so essential as for us to inform ourselves as to all that is requisite in the recognition of tuberculosis in the earliest stages, and then impress upon our patients the necessity of prompt and energetic action. I think, then, that nothing could be more timely than for us to take up this subject, and with renewed ardor never to allow it to rest for a moment so long as this great scourge continues its ravages among us.

Incipient tuberculosis is the form in which the disease is pre-eminently amenable to treatment, and it is therefore particularly to this period of the affection that our endeavors should be most directed in our attempts at its recognition. This incipient tuberculosis was defined at the last meeting of the National Association for the Study and Prevention of Tuberculosis, as follows:

"Slight initial lesion in the form of infiltration limited to the apex or a small part of one lobe."

"No tuberculous complications. Slight or no constitu-

tional symptoms (particularly gastritic or intestinal disturbances or rapid loss of weight).

"Slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours, especially after rest.

"Expectoration usually small in amount or absent.

"Tubercle bacilli may be present or absent."

DIAGNOSIS.

The symptoms observed at this period of the disease are usually so slight that they are altogether overlooked. The patient may, or may not have observed that his general health is not quite up to the normal, or he may have noticed slight loss of appetite, or symptoms of indigestion; a cough is frequently complained of, and quite a number of patients expectorate blood-stained mucus; in some cases the pulse is slightly accelerated, and particularly toward evening, the temperature may be somewhat elevated. The classical symptoms of the disease, such as loss of weight, anorexia, severe intestinal disturbances, cough, expectoration of quantities of thick, tenacious muco-purulent material, rapid respiration, fast pulse, sweats, fevers and chills come on during the latter stages of the affection.

In these incipient cases physical examination is of the utmost value in making a diagnosis. A careful examination of the apices of the lungs will generally reveal the presence of rales, which become particularly numerous after coughing. Over the infected region the respiration is usually somewhat prolonged, and of a higher pitch than normal, but in the very early stages of the affection these signs may not be observed. After a certain amount of consolidation has occurred more or less dullness may be made out. Typical bronchial breathing, or cavernous res-

piration with flatness on percussion are signs that will only be found in advanced cases.

Of course, the examination of sputum for the germ of tuberculosis is at all times of great value, and if the disease be suspected, daily investigations should be made until the matter is definitely settled; in some cases it is only after a careful search of many weeks that the bacilli are finally found.

In the short period during which the world went wild on the subject of the treatment of consumption by tuberculin it was observed that among the most unpleasant effects produced by the injection of this substance were the rapid rise in temperature, fast pulse, severe pains in the muscle, and, in addition, increased number of rales in the chest. Similar effects were observed in tuberculous animals after injections of this substance; veterinarians quickly took advantage of this fact by injecting tuberculin for diagnostic purposes.

The results that followed the treatment of consumption with this agent were so disastrous that in the reaction that followed the drug was tabooed, and it is only quite recently that its value as a diagnosic agent in human tuberculosis is being generally recognized.

In using tuberculin for the purpose of diagnosis, the initial dose should be small,—1 mg. being quite sufficient; if no symptoms follow 2 mg. may be administered after a period of two or three days, and if still no effects are produced, 3, 5 and 10 mg. at intervals of several days may be given. Trudeau sometimes waits for several days and gives another dose of 10 mg. where the disease is strongly suspected, and no reaction has followed the previous injections.

When given cautiously in this way all experts on the subject agree that no ill effects follow, and as it offers the

means of making a diagnosis before general symptoms, or physical signs make the nature of the malady clear, there can be no question of its great value, and that it should be generally employed for this purpose.

It is noteworthy that in more advanced cases the reaction fails to follow the administering of tuberculin, probably for the reason that the body is already so flooded with the poison of the germ that the addition of a small amount of tuberculin is not taken notice of by the system.

It affords me great pleasure to say that the laboratory of the State Board of Health is now in process of manufacturing tuberculin, and that within a short time it will be supplied free to all physicians in Georgia.

I would like also to emphasize the fact, which our physicians do not seem to be generally aware of, that we are making free examinations at our laboratory for *tubercle bacilli,* and that reports are promptly furnished physicians who send sputum to us. Not only are these examinations of great importance to the unfortunate victim himself but are of the utmost value to those who come in contact with him. I am sure that most of us have seen instances where an individual has contracted tuberculosis, and has undoubtedly infected other members of his family before the nature of the malady was recognized; under such circumstances an early diagnosis with proper instructions to the patient as to general hygienic precautions and the disinfection of his sputum would undoubtedly prevent such disastrous occurrences.

TREATMENT.

The treatment of tuberculosis along modern lines is marvelously simple; briefly stated, it consists in putting the patient practically out of doors night and day, in rest as long as the disease is active, and in sup-

plying a sufficient quantity of good wholesome food. When treated in this way patients improve to an incredible degree in a very short period of time, and where the disease is truly incipient, six months to a year suffices for a complete cure in a large number of instances.

In a recent visit made to the great sanatoria of the North, I was perfectly astounded to see the wonderful effects produced by this treatment. The patient appeared almost without exception perfectly well, and exhibited absolutely no outward evidence of the character of the disease from which they were suffering. I am sure it is not an overstatement when I assert that it would be almost impossible to collect together in any part of the world an equal number of individuals who would appear to be in such perfect health.

That we have in Georgia a large number of places where tuberculosis can be successfully treated there can be no question. The best informed all now agree that if the outdoor life, rest and proper feeding be carried out, it makes comparatively little difference where the patient is treated; of course, it is admitted that good country air is best for tuberculous patients, as it is for every one else, but even this is not essential. For a majority of patients an altitude of from 1,500 to 2,500 feet is to be preferred, and fortunately we have a number of such places within our State which are easily accessible.

At the instance of Dr. L. G. Hardman, a member of this Association, the Legislature, at its last session, passed an act ordering an investigation as to the feasibility of erecting a State sanatorium for the treatment of tuberculosis, and I am quite sure that the bare statement of this fact will enlist the unanimous help of this Association in the support of this measure.

DISCUSSION ON DRS. OERTEL'S AND HARRIS'S PAPERS.

Dr. E. C. Thrash, of Atlanta: It would be putting it mild to say that these papers are good ones. They are strong papers by strong men, and we should give them due consideration and attention.

The fact that this is a hackneyed subject should not induce us to become indifferent. When we go into the clinic and witness nothing but cases of tuberculosis, and say to the students, "Gentlemen, we have nothing but tuberculosis this morning," the boys are apt to laugh. And that feeling follows too much through our lives. We are too indifferent. When we see tuberculosis, when we hear about tuberculosis, when we see so many articles written on the subject, and are overwhelmed, so to speak, with talk on the subject, we become entirely indifferent. And it has got to be too much of a custom among physicians, as Dr. Oertel has said, to examine a man and if he has a cough, or elevation of temperature, or something by which we might suspect incipient tuberculosis, to wait and see what it will develop into. Probably the physician will say the patient will get well after a cursory examination; but later he may find that the tuberculous process has progressed rapidly, and that the patient is now beyond treatment or the possibility of a cure. After he has collected liberal fees from his patient, from time to time, he tells him to go West, and the patient does so with perhaps little or no benefit from the change of climate. Too much of this is carried on. It is useless, after a man is emaciated and his vitality very materially lowered, to advise a change of climate, because nothing on earth then will restore the bodily functions of such a patient.

What we need is to be alert and carry out the principles advocated in these papers, to grasp the idea at once of

possible incipient tuberculosis in such a case and put the patient on a plan to bring about a cure, and quit giving these quasi-consumptive cures, cod liver extract, cod liver oil, etc. Samples of such preparations are left on our desks for trial, and in my experience they are absolutely useless. I have abandoned cod liver oil entirely. I do not give any of the hog fat or any of the oil products.

Again, we are prone to rely too much on the microscope. A specimen of sputum is examined and the report comes back that it is not tuberculosis. The tubercle bacilli have not been found in the sputum. We are consequently told that the patient has not tuberculosis. The patient is satisfied. In two months or more, however, the disease has progressed to such an extent that very little can be done for the patient. The mere fact that we fail to find tubercle bacilli in the sputum does not make it clear that we should regard the case as non-tuberculous by any means. The tubercle bacilli may be overlooked or not found on account of lack of proper technique; or the tubercular mass or process may not have broken down, and the tubercle bacilli may not be thrown off; and one of the most fruitful sources of error is that nine-tenths of the sputum we get for examination is taken from the upper air or nasal passages.

Dr. H. McHatton, of Macon: I am very glad indeed to have heard these papers, and that this subject has been brought before the Association. The early diagnosis of tuberculosis is one of the most important things before the profession to-day, because so many of us see cases constantly, yes, daily, where the diagnosis has been neglected. In the majority of cases there is neglect in making a diagnosis simply because the mass of general practitioners do not take sufficient care to examine patients. The diagnosis of early tuberculosis is one of the most

intricate things in the profession. We do not find tubercle bacilli to amount to anything in many instances; consequently we have to rely upon the physical signs, which are not very pronounced—fluctuations in temperature, white scales, etc. By following these up we may be able to make a diagnosis; but we can not expect to make it in one cursory examination. It will often take several weeks and repeated examinations to make a diagnosis.

Speaking of thermometers, there are slight variations of temperature registered by different instruments. If you tell a patient to get a thermometer and take his temperature and bring the record, have him bring also his thermometer with him, because the variations in thermometers bought by patients are sometimes extreme. So much for the early diagnosis of tuberculosis.

Personally, my experience with tuberculosis goes back a good many years. I was sent to Georgia over twenty-five years ago with tuberculosis, so naturally my attention was attracted to this disease. For over twenty years I have not made the slightest change in my treatment of tuberculous patients. I have cases that have been under observation for over twenty years, and my experience has been that there is nothing in the world comparable with the absolute open air treatment. The more these patients get into the open air the better it is for them. They get better. If they can not go into the country, see to it that they are kept out in the open air.

Drugs are practically of no benefit in this condition.

There is one thing to which I wish to direct your attention, which has not been spoken of before, and that is, as a rule, it is better not to send patients with tuberculosis out of the State of Georgia, for several reasons. In the first place, you send a poor man out West, with probably

a small amount of money, and his condition is simply horrible. In his own State he can get practically any climate and any altitude he wants, from five thousand feet down to the level of the sea. Keep the patient with his people, and not send him off to die, to be isolated from his family and friends. Such patients can go up to North Georgia in the summer; to Middle Georgia in the spring and fall, and then go down to the coast for the winter.

Gentlemen, it is not a question of climate, or a question of altitude, but it is a question of open air, and it does not make any difference to the patient whether he is in Georgia, Kalamazoo, Colorado, or anywhere else, so long as he can live out in the open air. He can get any temperature he wants, and he can be within reach of the members of his family, and, as a rule, he will live better, get better surroundings in this State than any other place of reputation for tubercular patients that I know of. When I came to Georgia I did not know but one human being here, and as I had the pick of the whole world and had to take care of myself, I picked out the State of Georgia, and I have never had any reason to regret it. (Applause.)

Dr. E. B. Block, of Atlanta: These papers have interested me very much, and I can not refrain from giving my experience in some cases, such as have been mentioned.

I regard the use of tuberculin as an extremely valuable test. However, a great amount of precaution is necessary in the selection of cases in which it is used. In no case in which there is much elevation of temperature, or where the physical signs are decided and marked, is the tuberculin test warrantable, because it unquestionably accelerates the inflammatory condition, and we always hear of an increase in the rales around the tuberculous focus after the injection of tuberculin. However, in cases where

there is no marked rise of temperature, not over a fraction of a degree in the afternoons, where the physical signs are slight, this test is of value, as well as the search for tubercle bacilli in the sputum. I do not mean, if we find tubercle bacilli, there is no more indication than if we get a tuberculin reaction; I mean it gives about the same percentage of diagnostic result. In some cases of tuberculosis the tubercle bacillus may be absent. If absent, it does not necessarily prove that it is not tuberculosis; also the tuberculin reaction may be present, and, if present, it does not necessarily mean absence of tuberculosis. It is necessary, however, to know the dose which is given, and the reaction, when present, does indicate tuberculosis in some part of the body. It has been my custom to give one injection of five milligrams as the first dose. I have not found this too large, and there are a great many others who are of the same opinion. It is necessary in getting this reaction to keep the patient at rest. The temperature is taken at regular intervals every three days before injection to know exactly how the temperature runs without tuberculin. Then the tuberculin is given, and the patient kept in bed for three days, taking the temperature at regular intervals. If you start with small doses of tuberculin you must keep the patient in bed for six or eight weeks while giving gradually increasing doses of tuberculin, and I may state that repeated injections have made the reaction in my cases more remote; that is, they have delayed reaction. So much for that point.

With reference to fresh air, it may be interesting to mention the fact that if you take the air from the room in which a consumptive has been confined, in which there has been no ventilation, condense this air and incorporate it in culture media used for growing tubercle bacilli, the bacilli will grow more prolifically in this tube containing

the condensed air than they do upon media where this air is not so used. This in itself shows the importance of fresh air in the treatment of this disease, preferably dry air, because practically the discharges are less in a dry climate than in one in which there is much moisture present in the atmosphere.

I must say a word or two in reference to the treatment of tuberculosis by drugs. While I consider fresh air, rest in bed during the fever, and a liberal diet very essential factors in the treatment of this disease, I can not and will not accept the idea that drugs are of no benefit in this disease. I do not say that drugs have a direct curative effect upon the disease, but I believe their judicious use will prevent infection of the lungs and the development of other foci of infection. My meaning can be more easily understood if you will regard my fingers as bronchial tubes. (Illustrating.) Let us suppose that a patient has a very free bronchial discharge, a bronchorrhea, composed partly of the breaking down of the tissues in the lung from tuberculosis, and partly of the toxines of tuberculosis, causing a bronchial discharge of mucus; and supposing you have a focus of tuberculosis here (indicating), with tubercle bacilli appearing in the sputum, this bronchial tube reaches a point where it coalesces with the other bronchial tubes, and as deep inspiration is essential to vigorous coughing, the patient may suck tuberculous sputum into the other bronchial tubes. Therefore, the suppression of coughing by the use of drugs is of value in preventing the dissemination of tuberculosis in the lungs.

Dr. Louis H. Jones, of Atlanta: There are three points in connection with the treatment of tuberculosis which I think can not be too frequently and too forcibly emphasized, because I have so often seen them disregarded by members of the profession.

The first is the absolute necessity for rest during the period of activity and temperature. So many physicians tell tuberculous patients to get out of doors and take exercise; to go on a farm and work. A tuberculous patient with temperature is not able to exercise, and I think that is where we make a mistake often, and I know there are members of the profession who make the mistake of not giving their patients absolute and positive instructions on this point.

In the second place, there is a general idea among the laity, and unfortunately among some members of the profession, that a tuberculous patient is benefited by the use of alcohol; that he can not be hurt by drinking whiskey. I believe you help to kill a tuberculous patient and hasten the process when you give such instructions or directions as those. I can not too earnestly protest against instructions for these patients to take whiskey. If whiskey has any therapeutical value beyond the possibility, when taken shortly before meals, of increasing and producing an artificial appetite, where the patient is able to take nourishment which he is able to digest, but no inclination to swallow, I have been unable to discover it.

In the third place, I regard nourishment, after fresh air and right along with it, of first importance in the treatment, and to tell the patient he must take plenty of nourishment amounts to nothing. It is our duty to tell him what he must take, and how much he must take, and when he must take it, etc., so that he may understand it and will do it.

So far as my own experience goes, I give them raw eggs, or that class of food which the greatest majority of patients can digest with the greatest ease. I have seen some physicians who seemed to fear giving a patient too many eggs; but I have had a number of patients with

tuberculosis who took twelve raw eggs a day for a period of six months without producing any nausea, without producing any discomfort, indigestion, or any trouble whatever, and they would gain in flesh right straight along on it. I have repeatedly in my office sent the office boy across the street for an egg, and have swallowed it raw to show the patient how simply and easily it is done. (Laughter.) Most people want a little lemon juice or wine in it to disguise the taste. But that is a matter of secondary consideration. But these patients should be kept in bed; they should be nourished; they should be given proper directions what to do; they should never have alcohol poured down them. That can not be too strongly condemned by the members of the Medical Association of Georgia.

Dr. Oertel (in closing): It is flattering to have such a thorough discussion as the gentlemen have given these papers; and it is also flattering to me to have such an eminent gentleman as Dr. Harris write so similar a paper to my own.

My object was, as I stated, simply to call attention to the very lamentable fact that in almost every instance the early diagnosis of tuberculosis is overlooked. The question of tuberculosis is so large that it is almost impossible to make up one's mind where to begin or where to stop.

The treatment may be summed up in a few words: Fresh and proper air; proper food; proper rest; and proper medication. As to medication, all authorities agree that medication is of importance. Medication must be directed toward the relief of symptoms, and not given with the idea that it is specific. But unquestionably the use of drugs is very important in the treatment of tuberculosis.

It is my habit, when people consult me relative to their

condition, and ask my advice, if I think their cases are suitable and hopeful, to advise them to go to a sanatorium. In the last two weeks I have sent three patients West. I have told them I was not sending them West because it was West; I told them that Georgia was as good as the West practically, but that I was sending them West because I was sending them to a man who had a sanatorium in whom I had confidence, where they would get the proper handling and treatment of their cases, and if one can go to a sanatorium for treatment and place himself under the most desirable conditions, it is better for him to do so. He will have better supervision day after day than if treated in his home, because he will do things in a sanatorium he would not do in his own home, and he would leave things undone in his own home which he ought to do. Therefore, the ideal place is to put such patients, if possible, in sanatoria. We have no place in Georgia where these patients can get this treatment. We hope to have soon. If my paper will in any degree bring about this most desirable effect, that tuberculosis can be eliminated to a large extent where it may be present, it will be all that I had hoped for.

Dr. Harris (in closing): I have very little to say, Mr. President, in addition to what I have said in the paper.

I, however, wish merely to call attention to the fact as regards dosage of tuberculin, a point made by Dr. Block, that it is perhaps well to start with a small dose, not that five milligrams will do a great amount of harm. As we all know, when tuberculin is injected it sets up a violent process around the tuberculous areas; so it is well to use small doses so as to get as little reaction as possible.

As to the period of time necessary to keep the patient at rest, I think that has perhaps been somewhat exaggerated by Dr. Block. Two or three weeks in practically

all instances would be long enough; nor is it necessary to keep the patient absolutely in bed, or that he should remain in his room. Care should be taken that he does not resort to an undue amount of exercise.

I wish to emphasize the very valuable point made by Dr. Jones, that whiskey should not be used at all in this disease. I have found in my recent visit to various representative sanatoria that they have two rules, which under no circumstances are varied from. One is that if a patient spits on the floor he is hustled out of the place. Another one is, if they find a bottle of whiskey on a man he is sent away. I think alcohol is one of the worst things possible in persons who have tuberculosis.

"A NEW AND ORIGINAL SIMPLIFICATION OF THE PRESENT METHODS OF INFANT FEEDING."

By CHAS. E. BOYNTON, M.D., Atlanta.

It is already so well accepted that woman's milk, provided it is of good quality and sufficient quantity, is the very best food for an infant during the early months that it would be a waste of time for me to more than mention the fact.

In former years it was believed that woman's milk, whether good or bad, was better than any prepared food.

In recent years, however, the vast amount of careful study put upon this subject has proven that correct scientific artificial feeding gives by far better results than poor nursing.

The difficulty of the subject is well shown in the number of "proprietary foods" which flood the market, the manufacturers trying to do for the doctor what the doctor should be able to do for himself, and could do if he would give a little more time and study to the subject.

The only proper food for an infant, of course, is a "whole food," namely, one which contains all of the elements—fat, proteids, carbohydrates, mineral salts and water—which are necessary for perfect growth and development, and, besides, one which contains the element of *freshness.*

In looking over the list we find that the milk of animals is the only one which fits all the requirements, and that of the cow alone can be obtained in sufficient quantity to keep the price within reasonable bounds.

Yet cow's milk as furnished by nature is not a proper food for young infants.

This milk was intended by the Creator for the nourishment of calves, and they were accordingly supplied with four stomachs and the process known as "chewing the cud" in order that this milk might be diluted and finely divided before the calf is really called upon to digest it.

Consequently, before supplying cow's milk to young infants, it should be carried through some process by which it can be artificially finely divided for infant digestion, and this process we know as "modification," which consists in diluting and adding certain substances in order to get the different elements in about the same proportion as exists in good woman's milk.

In the larger cities of the North "milk laboratories" exist where the doctor can send a prescription for the baby's food, just as he would send to the "drug store" for its medicine, and have it filled with the same exactness.

Of course we have no such laboratories in the South, and my intention is to show that for all practical purposes the same results can be obtained by "modification at home" by an intelligent and careful mother.

The reason "modification" is necessary is that, while cow's milk contains all of the necessary elements, it does not contain all of them in the same proportions and forms as are found in good woman's milk.

Thus chemical analysis shows that woman's milk contains 3 to 5 per cent. fat, 1 to 2¼ per cent. proteids, 6 to 7 per cent. sugar, 0.20 per cent. mineral salts, 87.3 per cent. water.

Average herd cow's milk contains 4 per cent. fat, 3½ per cent. proteids, 4½ per cent. sugar, 0.75 per cent. mineral salts, 87.25 per cent. water.

Thus we find the two milks about equal in *fat,* while cow's milk is *much higher* in proteids and mineral salts and lower in sugar than woman's milk. Also the reaction of cow's milk is acid, while that of woman's milk is alkaline.

Thus in giving cow's milk to infants the percentage of proteids must be reduced, while the percentage of sugar must be raised, and the reaction changed.

Again, the proteids of cow's milk are not exactly the same in *kind* as those found in woman's milk.

The proteids of all milk consist principally of *casein* and *lactalbumin;* the lactalbumin being in solution and easy to digest, while the casein is insoluble and forms into hard curds when mixed with the gastric juice.

Koenig says: "Woman's milk contains, lactalbumin, 1.26 per cent.; casein, 1.03 per cent. Cow's milk contains, lactalbumin, 0.53 per cent.; casein, 3.02 per cent."

Thus cow's milk contains about one-half as much lactalbumin (the easily digested part) as woman's milk, and nearly three times as much casein (the part which is hard to digest).

Thus during the first few days it is necessary to reduce the proteids of cow's milk below that found in woman's milk, as the proportion of casein is so large.

As soon as the infant's stomach is used to the casein, the proteids can be gradually but steadily increased.

Fat is much more easily digested, and that of the two milks is practically the same in kind. Consequently, the fat can be given in larger amount than the proteids.

If we dilute the "whole milk" sufficiently to get the proteids at a proper percentage, the fat would be reduced very much below the amount which the infant needs and can easily digest.

Thus, in order to reduce the proteids without reducing

the fat too much, it becomes necessary to either add fat in the form of cream, or use a milk which contains an excess of fat.

Chemical analysis has proven that milk and cream are not different things, cream being merely milk which contains an excess of fat.

Thus 20 per cent. cream contains: Fat, 20 per cent.; proteids, 3.05 per cent.; sugar, 3.90 per cent.

Whole milk contains: Fat, 4 per cent.; proteids, 3.50 per cent.; sugar, 4.50 per cent.

Thus the difference in fat is 16 per cent., while the difference in proteids is only 0.45 per cent. Rotch says that fat free milk contains 4 per cent. proteids. Thus high cream and even skimmed milk contain very nearly the same percentage of proteids.

The easiest way to get very rich milk is to use only the top layers after the cream has risen.

A few years ago Dr. Holt caused a number of tests to be made at the Walker Gordon Laboratory which proved the following:

That if mixed herd milk is bottled soon after cooling and kept on ice nearly all of the cream rises in four hours, and that the upper layers will contain practically the same percentages of fat after four hours as they would in eight hours or twelve hours. This saves a good deal of time and makes a great difference in the freshness of the milk.

Thus—

PERCENTAGE OF FAT IN	After 4 hours	After 8 hours	Over night 12 hours
Upper 4 ounces	20.50	21.25	22.00
Second 4 ounces	6.00	6.50	6.50
Third 4 ounces	1.50	1.40	1.00
Fourth 4 ounces	1.20	1.00	0.30
Fifth 4 ounces	1.00	1.00	0 05

Knowing this, it becomes very easy to get a milk-cream combination containing practically any per cent. of fat desired, by varying the number of ounces of "top milk" used.

Thus—

Averge herd milk contains.....4% fat.
Let a quart of fresh herd milk stand on ice for four hours.

Top 24 ounces	averages.....	5% fat.
Top 20 ounces	"	6% "
Top 16 ounces	"	7% "
Top 14 ounces	"	8% "
Top 11 ounces	"	10% "

These six strengths of milk are all that will be required in feeding *most healthy infants* from birth up to fifteen months, after which time modification is no longer needed.

Practical experience has shown that most healthy infants have about the same needs as far as nourishment is concerned and that most of them can be fed in about the same way.

As a general guide in "Home Modification" the following table has been taken from Holt's "Diseases on Infancy and Childhood" as giving the percentages as best adapted to the different ages during infancy:

AGE	PERCENTAGES OF		
	FAT	PROTEIDS	SUGAR
Premature infants	1.00	0.25	4.00
First to fourth day	1.00	0.30	5.00
Fifth to seventh day	1.50	0.50	5.00
Second week	2.00	0.60	6.00
Third week	2.50	0.80	6.00
Fourth to eighth week	3.00	1.00	6.00
Third month	3 00	1.25	6.00
Fourth month	3.50	1.50	7 00
Fifth month	3.50	1.75	7.00
Sixth to tenth month	4 00	2 00	7.00
Eleventh month	4.00	2.50	5.00
Twelfth month	4.00	3.00	5.00
Thirteenth month	4.00	3.50	4.50

The usual method of modification uses only 10 per cent.

milk or top ⅓, 7 per cent. milk or top ½, and 4 per cent. or whole milk to dilute and adds sugar of milk and lime water, to get formulas somewhat similar to the above.

This method has two disadvantages: First, after the child is taking much food it requires the second quart daily, only the "top third" or "top half" of which is used, which in a year's time would make a considerable difference in the cost of milk, and in many families this is a point to be considered. Second, when by diluting the 10 per cent. milk (or top ⅓ milk), which contains three times as much fat as proteids, the percentage of fat in the resulting mixture is raised from 1 per cent., the starting point, to 3 per cent. or 3½ per cent. which is about right at four months, in order to advance the proteid strength, the *present method* changes to a "7 per cent. milk" or "top ½ milk" in which the fat is only twice as abundant as the proteids.

This necessitates a considerable temporary reduction in the fat strength in the food given. Thus in getting the proper proteid advance with this 7 per cent. milk, the fat percentage in the resulting mixture would be reduced from 3½ per cent. down to 2½ per cent., as the milk to be diluted is so much poorer in fat.

As the infant at this time is already digesting 3½ per cent. fat, it creates a decided loss to go back to 2½ per cent fat.

The objects of this paper are:

1. To show that the high point in the fat per cent. having been reached, it is entirely unnecessary, and for the time being detrimental to reduce it.

2. The fat percentage being properly worked out, it is entirely unnecessary to consider the proteid percentage.

3. To introduce an *equation* by the use of which it becomes unnecessary to remember any formulas, as they can all be easily and correctly worked out. The only thing necessary is to remember how to get the six different "cream strengths" to be used in the modifications.

4. By finding the average fat percentage in the milk and cream used in any home mixture, and then using that average in my equation, you can know practically what the infant has been taking.

Starting with a new-born infant to feed, we begin by diluting a "10 per cent. cream" because it contains three times as much fat as proteids, which is about the proportion which exists in a good sample of woman's milk, and taking a "20-ounce mixture" as a basis, because some of you may be used to calculating on that amount, and taking no account of the "sugar of milk" and "lime water" for the present, we would get the following formulas:

1 oz	10%	cream	+	19 oz.	boiled	water	=0.50%	fat	–0.17%	proteids.
2 oz.	"	"	+	18 oz.	"	"	=1.00%	"	–0.35%	"
3 oz.	"	"	+	17 oz.	"	"	=1.50%	"	–0 52%	"
4 oz.	"	"	+	16 oz.	"	"	=2 00%	"	–0.70%	"
5 oz.	"	"	+	15 oz.	"	"	=2.50%	"	–0.87%	"
6 oz.	"	"	+	14 oz.	"	"	=3 00%	"	–1.05%	"
7 oz.	"	"	+	13 oz.	"	"	=3.50%	"	–1.22%	"

Up to this point the results are identical with those of the present method, as given by Holt, so far as the fat is concerned.

By noticing the proteid column you will see that the proteids take care of themselves, as I have already shown that all "milk-cream mixtures" up to and including 20 per cent. contain practically the same proteid per cent., so that as the cream is added ounce by ounce the resulting proteid per cent. in the mixture must be gradually and steadily raised.

Having reached 3.50 per cent. fat in the mixture obtained by diluting 10 per cent. milk, if, instead of jumping to a 7 per cent. milk as is done in the present method, we take a middle ground and use an 8 per cent. milk, we would get only a very slight reduction in fat, 3.26 per cent., instead of 2.50 per cent., as would have resulted had we used a 7 per cent. milk.

Gradually increase the quantity of this 8 per cent. milk used in the mixture, diminishing the water by an equal amount, until the fat in the mixture is raised to 4 per cent., which is as high as any infant can digest long without disturbance.

Thus—

8 oz. 8% cream + 12 oz. boiled water=3.26% fat–1.40% proteids.
9 oz. " " + 11 oz. " " =3.60% " –1.57% "
10 oz. " " + 10 oz. " " =4.00% " –1.75% "

The fat having reached 4 per cent., we now change to a 7 per cent. milk to dilute.

Thus—

11 oz. 7% cream + 9 oz. boiled water=3.85% fat–1.92% proteids.
12 oz. " " + 8 oz. " " =4.20% " –2.10% "

The fat having reached 4 per cent. again, we change to a 6 per cent. milk to dilute.

Thus—

13 oz. 6% cream + 7 oz. boiled water=3.90% fat–2.27% proteids.
14 oz. " " + 6 oz. " " =4.20% " –2.45% "

The fat again reaching 4 per cent., change to a 5 per cent. milk to dilute.

Thus—

15 oz. 5% cream + 5 oz. boiled water=3.75% fat–2.62% proteids.
16 oz. " " + 4 oz. " " =4.00% " –2.80% "
17 oz. " " + 3 oz. " " =4.25% " –2.97% "

Changing to 4 per cent. milk or whole milk to dilute:

18 oz. 4% milk (whole) + 2 oz. boil'd wat'r=3.60% fat-3.15% proteids
19 oz. " " " + 1 oz. " " =3.80% " 3.32% "
20 oz. " " " + 0 " " =4.00% " 3.50% "

The present method as advocated by Dr. Holt, works all formulas on the basis of "20-ounce mixtures," and in order to get more than 20 ounces of food, this method takes fractional portions of 20.

Thus 25 ounces is equal to 20 ounces plus 5 ounces, or ¼ more, so ¼ more of each ingredient is added; or in 30-ounce mixture ½ more of each ingredient; 35-ounce mixture ¾ more, and 40-ounce mixture twice as much of each ingredient, etc.

This requires considerable figuring, and besides there is a different rule for working each set of formulas, thus: one for the 10 per cent. set and one for the 7 per cent. set, while none is given for the 4 per cent. or whole milk set.

If these formulas are to be used in every-day practice in feeding infants, it requires either a considerable taxation of the memory, or constantly going to the text-book every time a new formula is needed.

In order to avoid this, I have worked out the following equation:

The given cream %: cream % wanted :: the total number of ounces: number ounces to be added.

In this equation you can always know three of the items and it is an easy matter to find out the remaining item.

This equation works equally as well, no matter what per cent. milk is used to dilute or what the size of the mixture desired for the twenty-four hours food.

By applying the equation you can readily see how easy it is to get any of the above formulas.

Thus: If we are using a "10 per cent. cream" to dilute and want a "20-ounce mixture" containing 3 per cent. fat, the question would be how many ounces of the 10 per cent. cream to put in the 20 ounces to get a combination containing 3 per cent. fat.

Applying the formula:

10 (%) : 3 (%) :: 20 (oz.) : x (oz)
10 x = 60
x = 6 oz. of 10% cream in 20 oz. mixture equals 3% fat.
7 (%) : 3 (%) :: 35 (oz.) : x (oz.)
7 x = 105
x = 15 oz. of 7% cream in 35 oz. mixture averages 3% fat.

Or to work the other way:

Being called to see a child fed on a "home combination" which caused vomiting and undigested stools in a well nourished child, we found it was on a combination like this:

Baby four months old, taking 6 ounces at a feeding made as follows:

2 oz. gravity cream 16%
2 oz. whole milk 4%
2 oz. boiled water

6 oz.

Averaging up the percentages of fat in the cream and milk used, we find that really a 10 per cent. cream is being used to dilute.

Applying the equation we have

10% : x% :: 6 : 4
6 x = 40
x = 6⅔% fat in the combination.

This would disagree on account of the fat, 6⅔ per cent. being entirely too high for any infant to digest at any age, and causing the vomiting, and also the proteids, 2⅓ per cent. being too high at four months. Both the proteids and fat being responsible for the curds in the stools.

Another example:

Baby nine to ten months old, 8 ounce feedings:

1 oz. gravity cream at 16%
5 oz. skimmed milk at 1%
2 oz. boiled water

8 oz.

Averaging up the fat percentage in the cream and milk, we have a 3½ per cent. milk to dilute.

Applying the formula we have:

$3\frac{1}{2}\% : x\% :: 8 : 6$

$8x = 21$

$x = 2\frac{5}{8}\%$ **fat in the combination.**

While this combination in a nine- or ten-months-old baby would be digested with ease, still the baby would be cross and fretful and would either fail to gain weight or would actually lose weight.

Examples could be multiplied indefinitely and are similar to cases actually met in practice.

Thus if any gross error has been made in the feeding, it is easy to correct it by knowing where the fault lies.

Up to this point I have only considered the fat and proteids in the modification of milk. Of course, when the milk is diluted the percentage of sugar, which represents the carbohydrates in an infant's food, is reduced entirely too low, so it becomes necessary to add 5 per cent. sugar of milk to the combination.

This, together with the "sugar of milk" in the milk used, brings the resulting percentage of sugar in the modified mixture up to the required 5½ per cent. to 6½ per cent. or 7½ per cent. This holds good until about one-half of the total mixture is some form of milk, then gradually reduce the amount of sugar added.

Thus as the proportion of milk in the mixture grows larger, add a smaller percentage of sugar, as 4 per cent., 3 per cent., 2 per cent., 1 per cent., and none at all when the child is able to take whole milk.

As cow's milk is acid, while woman's milk is alkaline, it becomes necessary to add something to change the reaction. The best thing is to add 5 per cent. lime-water,

to all of these mixtures, and besides, this assists in the digestion of the casein.

Hoping that I may have said something which will create more interest in the feeding of infants and thanking you for your time and attention, I will leave the subject with you.

DISCUSSION ON DR. BOYNTON'S PAPER.

Dr. M. A. Clark, of Macon: This is a very important and to me an interesting paper. As you all know, the only successful way to treat children is by paying attention to their diet. It is simply impossible to treat them successfully in any other way.

Several years ago, when the matter of percentage feeding came up, and I looked at the percentages, it seemed so much like a mathematical proposition it almost staggered me. The charts the doctor showed this morning were all good; but when he gives you a problem as "10 is to 3, and 20 is to *x*," you say at once, I can not bother myself with these figures, and you do not pay the attention to this subject that you should. The rules he gave are good.

If you will look in Holt's last edition, I believe you will find he gives you a good guide. He calls the first series the series of fat; proteids three to one for infants from birth up to two or three months old. He uses ten per cent. cream, and does not make the proteids stronger than 1-16 per cent. up to the fourth month.

Not wishing to trust to memory, I make a copy of the formulae I use for future reference. Holt says that a child at the beginning should take one ounce of sugar, one ounce of lime water, two ounces of ten per cent. cream, and enough water for twenty ounces. That gives one per cent. sugar, five per cent. lime water, and one hundred per cent. proteids. If you have an infant that is

normally developed and healthy and put him on the bottle, that is a good start. If that infant is not well developed, or if he shows any weakness, or the family history impresses you that there is a suspicion of weakened digestion, begin with a weaker per cent. than that. I have adopted the rule of beginning with this, instructing the mother to weigh the baby at least once a week. If the child is gaining and digesting this, at the end of one week I advise her to give one or two ounces more. If, at the end of another week, the child is doing well I usually increase the amount one ounce and a half, and at the end of another week add one ounce of cream and take out one ounce of water, etc. After the child is six months old I use seven per cent. cream, giving it two to one. I use granulated sugar, ordinary cane sugar, instead of sugar of milk. I believe it was first suggested by Dr. Jacobi, of New York, some years ago. If we could get pure, unadulterated milk sugar, it would be very desirable, and all agree that milk sugar is *the* sugar. But it is difficult to do that, and after the use of milk sugar, if we get fermentation, disturbance of digestion, we are apt to attribute it to the formula of food. Cane sugar is always convenient. I make it a rule to estimate how much milk I want to have used during the day. I give a formula to the mother for the amount, instructing her to prepare the whole amount, pasteurizing it, keeping it in a cold place, and during the summer on ice. I instruct her to observe the directions as to cleanliness, etc. By that method I have had very little trouble. Occasionally I forget, but we should remember that for a child two or three weeks old we should add one more ounce of cream to the proportion, which makes it strong enough; that for a child a little older we should add another ounce, and so on, until we get to the fourth month, then gradually increase

the proportions. It is a little trouble to remember the formulae, but sitting down and writing out a formula for each infant is like sitting down and writing out a prescription for each patient. This is what we should do, as it is much more satisfactory than to use the elixirs fixed up by the pharmaceutical houses so elegantly and palatably, and give the same dose to every patient regardless of temperament, build, or individual characteristics or idiosyncrasies. (Laughter.)

Dr. Boynton (in closing): I have only a word or two to say in closing the discussion on my paper. The principal object of this paper is to get physicians all over Georgia to use proper artificial feeding. Every now and then I have a baby brought into my office that is very much emaciated—in fact, starved to death, not because he is not getting food, but because that baby has been started incorrectly. For instance, take a baby at eight or nine months old that is going to be weaned, instead of starting it on artificial food at about six or seven weeks, or two months, and gradually going up, practitioners will go to work, if they use these formulas at all, and put such babies on nine months artificial feeding. The baby's stomach is not accustomed to casein, and it will be upset every time, and it is much easier to carry these babies along all right if you start them so that their digestion will keep right than it is to correct the digestive trouble you have caused by imperfect methods of feeding. I have done the same thing myself, have found out my mistake, and I simply wished to call your attention to that subject.

THE PROGNOSIS IN CHRONIC NEPHRITIS.

By Claude A. SMITH, M.D., Atlanta.

To give a prognosis in diseases of the kidney is undoubtedly one of the most difficult tasks which the physician is called upon to perform.

In the post-mortem room and in the laboratory we may describe the condition of the kidney, and gain some idea of the amount of involvement, but clinically it is a difficult task indeed to say to what extent the kidneys may be affected.

From the time of the recognition of diseases of the kidney by Richard Bright, in 1827, different writers, such as Christison, Rokitansky, Frerichs, Virchow, and others, have given various classifications to the different diseases of the kidneys. Virchow called attention to the fact that we may have parenchymatous nephritis, an interstitial nephritis, or an amyloid degeneration. Even with as simple a classification as this, the physician is often puzzled to know which he has to deal with.

In this brief paper my remarks will be directed more to the consideration of the chronic forms of nephritis. Chronic nephritis often develops from the acute attacks, but in many instances we find that the chronic inflammation comes on insidiously, and it is not possible to say just how long the kidneys have been affected. The condition may develop so gradually as not to produce any appreciable symptoms for considerable periods, and the

condition only be brought to the notice of the physician by an acute exacerbation of the chronic condition.

We can recognize the involvement of the kidneys, in addition to the general symptoms produced, by the elements contained in the urine. This is shown by the production of albumin, casts of all kinds, blood, pus, etc., and we may have one or all of these present in the urine, depending upon the character and severity of the attack.

After finding that there is an inflammation of the kidneys, the next point is to determine as near as possible to what extent the function of the kidneys is involved. As we know, the kidneys have the ability to do a great deal more work than they are ordinarily called upon to perform, but as a result of impairment of function the entire reserve power is called upon, and as long as this is able to throw off the toxic products the vitality of the organism is preserved; but when the point is reached where these toxic products are retained in the system, and the kidneys with the assistance of the other emunctories are unable to eliminate them, then we begin to get the effect of their poisonous influence. This point of lack of elimination may be reached early, or it may come on gradually.

The physician may be called to a case where the kidneys have the ability, with the assistance of the other emunctories, to keep the body in fairly good condition, but if the other emunctories are sluggish and not doing their full duty, then the kidneys are called upon to do more than they are able to accomplish in their crippled condition, and as a result serious symptoms begin to appear.

In severe irritations the point of lack of elimination is reached early, and the condition is then spoken of as acute nephritis, or acute Bright's disease. When the irritation is of a mild type and continues day after day, month after

month, and year after year, it produces what is commonly spoken of as a chronic nephritis, which may be either parenchymatous or interstitial in character. Or we may have the chronic type following the acute, the latter often leaving the kidney susceptible to every little irritant, and thus is kept up a continued irritation or inflammation of the organ.

The point to be borne in mind is, that so long as the elimination of the toxic products continues, so that there is no accumulation of them in the system, the vitality of the organism is preserved, and this is the basis of prognosis in these cases.

The finding of both albumin and casts in the urine is evidence there is an inflammation of the kidneys; but the finding of these does not mean that those kidneys are completely worn out, and that the patient has only a short time to live. It may be that the function of the kidneys is so little impaired that with proper care and treatment the patient may live a great many years in fairly good health. After examinations of the urine and careful inquiry into the history of the patient's condition, and it is determined positively that there is a chronic inflammation of the kidneys, we can by a consideration of this history and by a careful investigation of the present condition of the patient, and especially the condition of the heart and arteries, obtain *some* idea as to how long the patient may continue to live.

As a rule, we should inform a patient as to his condition in order that we may secure his co-operation in carrying out the treatment, but in imparting this information we should be extremely careful that the patient does not get a wrong impression as to his condition. For this reason never use the term "Bright's disease," for to the average layman this term conveys only the impression of

early death. There is nothing that will throw a man into a panic quicker than to tell him that he has Bright's disease. This disease is looked upon with horrible dread, and the depression produced upon the patient by this term is something terrible, and the effect of this mental condition is sometimes worse than the disease itself. After telling a man that he has Bright's disease, no matter how carefully the physician may go over the man's condition with him and explain to him just what he may expect, it is impossible to remove the terrible impression first conveyed to his mind.

As before stated, the physician is often called to see these chronic cases during an exacerbation, and the patient was probably not aware of the existence of the chronic condition previous to the acute attack. Many of these cases will recover from the acute attack with very little treatment, and in a short time will be almost as vigorous as before the attack, and so, if at the time of the acute condition the patient is informed that he has Bright's disease, and he afterwards improves to such an extent that he feels as well as he did previously, he then thinks that the doctor made a mistake and he loses confidence in the physician. Or, the patient at first believing the doctor's statement, and then upon anxious inquiry being told that there is no possible chance to cure him, like a drowning man he grasps at every straw, and seeing a large full-page advertisement in the newspaper with pictures of prominent people who have been "cured," and with the further statement that the medicine is "guaranteed to cure Bright's disease," he immediately "resorts to" several bottles, and as he gradually recovers from the acute attack, he believes that he is entirely well, and forthwith adds his picture to those already in the paper and swells the list of endorsements with the statement

that he had been "cured after the doctor had given up all hope." Thus the man goes along in comparatively good health, believing himself entirely cured, and possibly later on succumbs to an acute attack of some other disease to which he was rendered more susceptible by his chronic nephritis, and as a result of his having died from this other disease without having shown any marked evidence of the return of the kidney trouble, all his friends and relatives are firmly convinced that he was cured by the quack medicine, and in the future will cite his case, to the chagrin of the physician, who knows that he was correct in his statements, but yet is powerless to combat the impression which has gone abroad among the laity.

There is one point which is sometimes overlooked, and that is, that every case of chronic nephritis, and this is especially true of the interstitial type, does not always show albumin in the urine. In looking over the record of my cases I find that almost 50 per cent. show casts without any albumin. Cases of nephritis have periods of improvement when the only evidence of the condition is a few hyaline casts, and even these may disappear for a time.

We should give prognoses in kidney troubles only after we have made a careful and thorough examination of the urine and of the general condition of the patient, and the opinion of the physician should be couched in such language as will not convey a false impression, and he should avoid any expression which would produce any unnecessary alarm, and, last of all, let us always remember that every patient possesses more or less of that unknown force, called vitality, which will sometimes hold them upon this earth when it did not seem possible for them to continue their existence.

DISCUSSION ON DR. SMITH'S PAPER.

Dr. C. L. Williams, of Columbus: I rise to impress upon the members the importance of carefulness in giving a prognosis of chronic nephritis. Dr. Smith's paper is a very valuable one, and should be brought to the attention of every physician. I have a case on hand that I have been treating for a year, and I do not know that he is any worse to-day than when I began treatment; yet the prognosis was made that that boy would not live more than twelve or eighteen months. A gentleman going to New York city went to a very reputable and eminent physician for examination. He was examined and the physician told him he had Bright's disease. The man went away bowed down with grief; went to the lower part of the city and was found dead by his own hand. If that physician had not told the man he had chronic nephritis and recovery was impossible, he might have been living to-day.

Dr. Smith (in closing): My main object in writing this paper was to impress upon the members the importance of making a careful examination before giving their prognosis. We should go over the case thoroughly. If a patient comes to you and does not know that he has inflammation of the kidneys, and he has inflammation of the kidneys, do not tell him he has Bright's disease, because after that you can not do anything with him. He immediately loses all interest in everything. It throws a damper over his life for years to come, and if he should live for years he comes to the conclusion that it is not such a bad thing, after all, yet the effect of those few years is lost in that man's existence. We should go slow in telling a man that he has Bright's disease. I avoid the use of this term. We should not only examine the urine repeatedly, but make repeated physical examinations of

these patients, which have a great deal to do with the prognosis. After these careful and repeated examinations, going over the general condition of the patient very thoroughly, we get some idea of what we may expect. Sometimes a patient may have a chronic inflammation of the kidney and live for twenty years with it. In an acute attack the patient may become comatose, but even then we should not give up hope. He may recover from this acute attack and live for ten, fifteen or twenty years. If the average patient is told that he has Bright's disease, it means to him that he is going to die, and if he does not die, he thinks you are not much of a doctor. So I think it is best for us to be exceedingly guarded and cautious in making these prognoses.

HYPEREMESIS GRAVIDARUM.

By RALSTON LATTIMORE, M.D., Savannah.

Within the past eighteen months four cases of fatal hyperemesis gravidarum have come under my observation. Having felt so helpless in treating these cases effectually, I am impressed that the subject is one requiring further research and more careful consideration on the part of the medical profession. Having carefully been over all available literature appertaining to this subject, the fatality of a certain class is forcibly emphasized after they have assumed an aspect significant of an advanced condition.

Before attempting to treat successfully the vomiting of pregnancy, necessarily it is imperative that such cases should be classified.

In treating and observing these cases the consciousness that something was occurring in the human anatomy concerning which I was totally ignorant was unmistakable. The inclination was to ascribe the deaths to an intestinal toxemia, due, as ventured in a previous report, to a total inactivity of the functions of the digestive organs; for in three cases, for several days before death, the stomach retained liquid nourishment; and when this organ becomes retentive one is justified in hoping the danger is passed.

Only in one case was an autopsy obtained. The patient was extremely emaciated, and the liver a pale yellow, almost white, and easily pitted under pressure. The gross

appearance of the organ was not followed up by a microscopical examination, but enough was seen to suggest the conclusion that the case was probably one of acute atrophy of the liver; and on a similar hypothesis it is assumed the two other cases presented the same pathological picture.

The classification that appears most practical is the one given by Dr. J. W. Williams, of Baltimore, and which is as follows:

1. Reflex vomiting of pregnancy.
2. Neurotic vomiting of pregnancy.
3. Toxemic vomiting of pregnancy.

Under the head of reflex vomiting may be included as causative factors, malpositions of the uterus, especially retroflexions and ovarian tumors. The removal of the cause necessarily eliminates the condition.

The neurotic origin of many cases was suggested by Auquelin in 1865, but Kaltenback presented the subject before the Berlin Obstetrical Society, in 1890, in such a distinct and forcible manner that it has been given marked consideration. This class only should be seriously considered, after excluding the reflex and toxemic varieties, the latter by a careful examination of the urine.

The third, or toxemic type, is of the utmost importance, because, under that subdivision fatal hyperemesis gravidarum finds its logical place.

For a better comprehension of the condition as it exists, it is well, perhaps, to quote the opinions of some well known writers on obstetrics. With this end in view, abstracts from a paper by Dr. William S. Stone, of New York, on "Toxemia of Pregnancy," may help to solve the problem.

Winckle says: "In five per cent. of the cases vomiting is of no consequence, while in two-thirds of the cases it

occurs after eating. In thirty-five years he has never had to perform an abortion on account of it."

Lusk declares that "it is usually the part of prudence to do nothing for the ordinary morning sickness or continuous nausea, unless the general nutrition of the patient is disturbed." For some cases he suggests Stenfort's advice, to "let the wife go on a visit to her mother." (This furnishes a serviceable hint in the way of practice.) When the vomiting is uncontrollable, a resort to abortion may be necessary. "Remember," he says, "vomiting stops after the third month."

Barnes remarks: "It appears to us that incoercible vomiting induces or aggravates organic changes in the liver and kidneys. We have seen it is the first symptom of acute yellow atrophy of the liver."

The American Text-book of Obstetrics avows that "the progress of our knowledge of the pathology of pregnancy gives good reason for the belief that nausea and vomiting are not physiological, but pathological, accompaniments of pregnancy."

Jewett defines the vomiting as "pernicious when it is so severe and persistent as to seriously jeopardize the woman's life, and when it will not yield to the usual remedies."

As Dr. Stone remarks: "The general conclusion drawn from the various text-books is that pernicious vomiting of pregnancy is a condition whose pathology is unknown."

Dr. J. Shortridge Williams, Professor of Obstetrics at the Johns Hopkins University, has recently written a widely published and able paper on the "Pernicious Vomiting of Pregnancy." Therein he states that "at present we are absolutely ignorant of the nature of the toxic substance, or substances, concerned; though it would seem, with our present knowledge, that there is a disturbance in

the metabolism, and directly connected with pregnancy, though whether derived from the mother or fetus, or both, is unknown. All we can say is, that in some cases of pernicious vomiting we have to deal with a toxemia, which gives rise to serious lesions of the liver; and, later, in the kidneys. That the latter are secondary in character is indicated by the fact that the urine does not contain albumin until shortly before death.

Dirmoser, Vienna, has made a careful examination of the urine in twenty cases. He believes that hyperemesis gravidarum is due to a toxemia from the intestines. The growing ovum causes a reflex irritation of the vagus and sympathetic nerves, which disturb the secretions of the alimentary canal, so that the by-products of the albuminous substances are absorbed. In favor of this theory is offered:

1st. The presence of a number of proteid bodies in the urine.

2d. Experimentation shows that injections from the contents of the small intestines soon produce death.

There is no fixed time as to when the pernicious vomiting may occur. The cases under observation happened in the early months; in fact, before the end of the fourth month. According to Maurice Gerst, "forty-two per cent. of all women vomit during pregnancy."

This emesis is more frequent in primiparae, and, as a rule, increases in severity until the third month. The average duration covers that period; and in seventy-two per cent. has ceased by the fourth month.

Autopsies on fatal cases of hyperemesis gravidarum show identically the same result: Changes in the abdominal viscera simulating acute yellow atrophy of the liver.

For practical purposes the following report of an autopsy, held on one who had succumbed to pernicious

vomiting of pregnancy, is tendered in full from the writings of Dr. William S. Stone, of New York:

"Abdomen: No signs of peritonitis.

"Liver: Markedly retracted from anterior abdominal wall, appeared much smaller than normal; did not reach free border of the ribs surface wrinkled..

"Color: Light-yellow; easily pitted under finger pressure; fatty appearance.

"Microscopical Examination: The cells have undergone fatty degeneration, etc.

"Stomach and Intestines: Black coffee-ground fluid in intestines, which gave Hemin test.

"Mucosa: Normal.

"Spleen: Color dark, normal size; capsule smooth; cut surface showed congestion, etc.

"Pancreas: Macroscopial examination, normal.

"Microscopic examination showed mild cloudiness of parenchyma.

"Kidneys: Normal size; consistency, firm; color, light yellow; capsules, smooth; stripped easily; surface, smooth; cortex somewhat thickened, color yellow. Microscope showed intense fatty degeneration of parenchyma, especially of convuluted tubules. No evidence of any chronic nephritis.

"Uterus and Appendages: Normal."

Now as to the clinical manifestation of the condition presented to us in actual practice: The first case, a primipara, aged twenty-six, four months pregnant, was seen with Dr. Ralph M. Thomson, of Savannah. She began vomiting soon after conception, and continued without any abatement. The patient was confined to bed, listless, with rapid pulse and occasional delirium. At my suggestion it was considered advisable to remove her to the Park View Sanitarium, in order that she might be under

constant observation and receive the advantages of trained nursing. After a few days the stomach began to retain liquid nourishment, but the rapid pulse and delirium continued, and diarrhea developed. She gradually became worse and died. Subsequently I regretted not having advised the emptying of the uterus.

The second patient who came under my observation soon thereafter was also a primipara; thirty-five years old, about four months pregnant. There was considerable emaciation, rapid pulse and incessant vomiting. Delirium was absent. The uterus was immediately emptied. The rapid pulse continued, but the patient began to retain small amounts of liquid nourishment. This, again, proved of no avail, as later she developed a delirium almost maniacal; the pulse rate increased, strength gradually leaving her, and ultimately death intervened.

My third case followed close upon the footsteps of the preceding. The patient, a multipara, was between three and four months pregnant. The uterus spontaneously emptied itself, just before coming under observation. Prior to death the vomitus contained blood. A rise of temperature, and the presence of albumin in the urine were of an ante-mortem nature. A post-mortem examination was secured on the third case. The appearance of the liver, which impressed me especially, was a pale yellow, almost white. The stomach was congested, and the anterior wall contained a large rent, while the abdominal cavity was filled with a sero-sanguinous fluid and some blood clots. The immediate cause of death in this instance was evidently attributable to a rupture of the stomach and hemorrhage.

In the foregoing cases vomiting was well advanced when seen. Surely, however, one ordinarily anticipates, when the stomach becomes retentive, that with careful

feeding the danger is passed; but experience has dispelled the illusion.

The fourth case I report with the consent of Dr. Ralph M. Thomson, of Savannah, in whose practice, a few months ago, it occurred:

A multipara, aged thirty-two and the mother of two children, was in the third month of pregnancy when seen. With the first child both nausea and menstruation had continued practically throughout the entire period. In the second no abnormal condition was noted. Two years prior to what proved to be her fatal sickness, she aborted at about three months. Her previous history was one of constipation, which became aggravated with conception and the incipiency of vomiting. When first consulted nausea had persisted periodically for ten days, but was not sufficiently marked to cause alarm, prevent light feeding or compel the patient to go to bed. For three days subsequent to the first visit the patient remained up and about and retained some nourishment, both pulse and temperature in the meanwhile remaining normal. On the evening of the fourth day the vomiting became intense, soon increasing in severity, and the pulse rate greatly accelerated. Throughout the fifth and sixth days the condition grew in gravity, and the stomach retained nothing. On the morning of the seventh day (less than seventy-two hours after going to bed) the uterus was emptied. The pulse at the time fluctuated between 125 and 140 beats per minute and continued in this ratio until a short while before death, when the rate was increased. On the third day after the induction of abortion, and not until then, the vomiting ceased. With this cessation involuntary evacuations commenced. These continued at intervals. The movements were dark, slimy, and of a gelatinous consistency. On the evening of the next day, one

week after being forced to bed, the patient died. The temperature remained normal until twenty-four hours preceding the end. There was no delirium, and she was rational practically throughout the entire period of sickness. Her kidneys acted well, and at no time was albumin found in the urine. Emaciation was decided and progressive. An autopsy was not held.

TREATMENT.

The successful treatment of the vomiting of pregnancy must necessarily take place before it becomes pernicious. It has been demonstrated to my mind very conclusively that after a certain stage has been reached, any and every form of treatment will avail absolutely no result.

It is of prime importance to accurately diagnose, or classify, if possible, each condition; and to know when to interfere in cases of toxemic vomiting. The task is not easy.

Jewett says: "The vomiting is pernicious when it is so severe and persistent as to jeopardize the patient's life." My own experience but corroborates his opinion, for, at this time, not only does it fail to yield to such remedies, but no method of treatment has given encouragement. The decision must be reached before this stage, and the chief hope of success for a scientific and reliable treatment seems to be through the medium of a careful examination of the urine.

In many cases the urine responds to the usual tests, as to specific gravity, albumin, etc., in a normal way, consequently little can be expected from anything in the way of the usual routine examination.

J. W. Williams says: "There is a striking change in the metabolism which is manifested by a great increase in the percentage of nitrogen put out as ammonia, as com-

pared with the total nitrogen of the urine, so that the former, being from 3 to 5 per cent. normal, may rise from 16 per cent. to 46 per cent. Whether this increased ammonia coefficient is due to the fact that the marked destruction of the liver tissue interferes with the normal oxidation of the nitrogeneous material, so that large amounts escape conversion into urea, and are, therefore, excreted in a less highly oxidized form as ammonia; or whether it represents an attempt to neutralize the excessive production of acid, a so-called acid intoxication, is at present undetermined." He further remarks that the practical outcome of his experience is, that "the marked increase in the ammonia coefficient in women suffering from the pernicious vomiting of pregnancy, indicates the existence of a serious toxemia, which, if allowed to continue, will be accompanied by lesions of the liver and other organs inconsistent with life." He lays down the rule that ammonia coefficient of ten per cent is the danger signal. He thinks that when that is reached abortion should be induced, as it offers the only hope of checking the toxemia and saving the life of the patient.

The practical importance of a differential diagnosis between neurotic vomiting of pregnancy and the toxemic variety is, therefore, apparent; and, theoretically, at least affords a working basis that only an examination of the urine can supply.

If, after such an examination, it is ascertained that the ammonia nitrogen is not increased, then the vomiting is in all probability of neurotic origin. As little is to be derived from the means now at our command, the suggestion, to say the least, deserves a searching investigation and diligent study.

In neurotic vomiting the patient should be put to bed,

carefully fed; and given practically a rest cure. Good results may be expected without further interference.

Usually in the toxic type an excess in the amount of ammonia nitrogen and a decrease of urea nitrogen are found.

Stone lays a great deal of stress on excesses of indican, and the presence of albumin in the urine.

The ordinary hypo-bromite method of estimating the urea includes both the urea and ammonia nitrogens, therefore the result is misleading.

When the diagnosis of toxic vomiting has been established by examination of the urine; that is, when demonstrated that the quantity of ammonia nitrogen is 10 per cent. or over, the most rational form of treatment seems to be that of elimination, with absolute rest in bed, daily lavage, rectal feeding and hot saline enemata frequently repeated, with a little whiskey added if necessary.

The question of emptying the uterus is often a matter of great consideration.

Cohnstein says: "Out of two hundred cases, forty per cent. continue to vomit after this has been accomplished." He states that when "safe and efficient it is not necessary, while in extreme cases it adds greatly to the danger, and rarely stops vomiting."

As to results, my experience and observations coincide with the opinion he has expressed.

In two of the cases cited the stomach retained liquid nourishment for forty-eight hours before death, but whether such was digested and absorbed is decidedly questionable.

I have had no practical experience in the examination of the urine for ammonia nitrogen.

My chief object in writing on this subject has been in the hope of inviting a discussion, which may prove of lasting benefit to the profession.

WHEN MAY WE ADVISE GONORRHEAL PATIENTS TO MARRY?

By W. L. CHAMPION, M.D., Atlanta.

Appreciating the fact that from fifty to seventy-five per cent. of the acute inflammatory conditions of the female pelvis are due to gonorrheal infection, that gonorrhea in the male is as deceptive as Satan, and frequently a very troublesome disease to cure, makes the above question, to the thoughtful and conscientious physician, one of serious import.

When we consider this high percentage of innocent women suffering as a result of man's ignorance and depravity, and knowing that ninety or ninety-five per cent. of the male population at some period of their lives suffer from gonorrhea, this question can not too often be brought before medical men for discussion. Patients are so frequently seen with a chronic gonorrhea, which has extended over a period of years, that the question is often asked, is the disease curable? When the infection is confined to the genital organs, that is, the urethra, bladder, prostate, vesicles and adjacent glandular structures, it is curable at any stage. When the kidneys or the joints and other serous membranes are attacked, it is doubtful if they are ever restored to their normal condition. I warrant the assertion, and can demonstrate it, that in a large majority of the chronic or relapsing cases of gonorrhea the seat of trouble, or focus of infection, is in the prostate gland and seminal vesicles. Next in frequency, it will be found in the thickened and inflammatory tissues around

urethral strictures or fistulous tracts and periurethral glands.

In a case of gonorrhea that has extended over a period of months the gonococcus has not limited its ravages to the epithelial covering of the urethra, which an ordinary injection or local application will reach, but has penetrated deeper into the tissues and, therefore, more stubbornly resists therapeutic measures. It is not infrequent to see a patient who has gone for months without any external evidence of the disease, and the urine containing very few "clap shreds" develop, as it were, a fresh attack from the passage of a full-size sound; or thorough massage of the prostate will bring to the surface gonoccocci that have been lying dormant in the glands and follicles. The point which I wish to emphasize is that the disappearance of all external evidence of the disease, as a rule, leads the patient, and too frequently his physician, to believe that he is well, when, in fact, he is as dangerous from the standpoint of being infectious as if he had a purulent discharge from the urethra. It is not only the genito-urinary surgeon who should be posted in regard to these matters, but every physician who takes charge of a case of gonorrhea should be well enough informed to make the necessary examination and tests, and determine whether a man can infect his wife or not.

The urine of a gonorrheal patient should be examined each day in a clean, clear glass, with a good light, to see if shreds or particles of pus are in the specimen, and to note the improvement or retrograde action of the disease. This test is as important as taking the pulse of a patient with an acute febrile disease. There may be pus in a patient's urine and gonococci absent, but it is the exception, when there is a history of gonorrhea. It is the duty of a physician, before dismissing a patient as cured, to see

that his urine is free of pus, or, if pus is present, that it does not contain gonococci; that the prostate or seminal vesicles are not involved; that there are no fistulous tracts or enlarged glands about the frenum or along the urethra; he should pass a bulbous bougie or urethrometer to note if there are contractions of the urethra. With the endoscope the entire length of the urethra can be inspected to determine if any of the follicles or crypts are diseased.

To treat gonorrhea scientifically it is absolutely necessary to use the microscope. It is criminal to write prescriptions for patients, allow them to treat their own case, and, with the little knowledge they have of the disease, determine from external appearances when they are well.

If every practitioner will make it a rule to carefully examine the genitals of this class of patient, feel of the prostate to ascertain if it is sensitive, hard, enlarged or involved in any manner, strip the vesicles, and examine the various secretions under the microscope, which is a simple procedure, it will take only a short time to gain the experience which every man should have who handles cases of this kind; then he can give to his patrons the scientific advice they pay for, and to humanity that which he owes. When a patient's urine is free of pus; when the prostate and vesicles are in a normal condition, when the periurethral glands are not enlarged, when the prostatic and seminal secretion obtained by compression and urethral discharge set up by a solution of silver nitrate does not show the gonococcus present, we can state to a gonorrheal patient that he may safely marry. The highest and most unselfish duty in our professional work is the prevention of disease and the protection of the innocent. We can in part perform this duty by protecting innocent women from the ravages of this dread disease, and lessening the number of infants soon blind to the world.

GONORRHEA.

By W. C. DeLAMAR, M.D., Mountain Hill.

I wish first to report a very interesting case of gonorrhea. May 24, 1905, a negro whose features and personal demeanor were characteristically African, came into my office and said: "Doctor, I want you to do something for my eyes." A severe conjunctivitis of one eye was evident. The history revealed a mild case of gonorrheal urethritis. A microscopic examination of the excretions from the eye made by my brother and myself demonstrated the presence of the gonococci in abundance. He was instructed as to diet, cleanliness, temperance and hygiene. A mild solution of protargol was prescribed and I asked him to return in five or six days, as he lived about eight miles. June 2d he returned somewhat improved. The prescription was refilled and he was instructed to return when he had used the medicine. He was next seen July 19th. Was he cured? Nay, verily. Both eyes were affected and one to two corneal ulcers in each eye. Both nasal chambers were typically gonorrheal. A tonic treatment was given. Peroxide of hydrogen, followed by protargol solution was the prescription to be used in the eyes and nasal cavities. Ulcers were treated locally. He was asked to come more regularly, which he did for six or eight weeks, at the end of which time he was very much improved, or about well. Subsequently he removed and has not been seen since.

This was a case of gonorrheal ophthalmia of pro-

nounced severity, originating from a mild case of gonorrheal urethritis that yielded to treatment. Is it not probable that the infection went from the eye to nasal cavities by way of the nasal duct? Both sides were affected simultaneously and were equal in severity. In treating gonorrheal urethritis I have found for the initial of the attack a 5 to 10 per cent. solution of protargol one of the best remedies to use as injection three times a day or more, at the same time giving some of the mild urinary antiseptics. For attack of long standing pass your sounds for a stricture of some type, for it is more than likely to be present. I have been more successful with permanganate of potash as an injection, varying in strength according to the individuality of the case. Here, too, I consider the internal antiseptics of service. That gonorrhea is due to the gonococcus no informed physician will dispute. It is equally well known that gonorrhea is contracted nine hundred and ninety-nine cases out of a thousand by sexual intercourse. In every case, one for sure, and sometimes both, of the parties are prostitutes. G. Frank Lydston, than whom we have no better authority on genito-urinary surgery, says that "the fallacious notion of the simplicity of gonorrhea and its congener has proved disastrous. Physicians should embrace every opportunity to impress the patient with the fact that gonorrhea is one of the most, and perhaps the most, far-reaching in its results of all the infectious diseases. It is not only worse than a bad cold, contrary to the lay opinion upon the subject, but it is far worse than its much dreaded rival for venereal popularity—syphilis."

In view of these facts we have not discharged our duty to our patients if we fail to impress on them the gravity of the disease, and the absolute necessity of their most hearty and sincere co-operation in treating gonorrhea. Again we

quote Lydston: "Stricture, the most important sequel of gonorrhea, is often productive of the most profound pathologic disturbance in the proximal portion of the genito-urinary tract. Inflammation of the bladder, calculous disease, inflammation and dilatation of the ureters, surgical diseases of the kidneys, and possibly ordinary Bright's disease are often directly traceable to it. Few individuals who have suffered from pronounced stricture are unaffected either with renal disease, or what is practically the same thing, a locus minoris resistentiæ in the direction of the kidneys that favors the development of acute or chronic Bright's disease from apparently trivial causes. There are few, if any, cases of posterior gonorrhea in which the prostate is unaffected. It is the author's view that many individuals who, in after-life, develop prostatic hypertrophy owe that condition to the effects of an early gonorrhea. We are all aware of the frequency of prostatic affections in old men.

If these were the worst features and sequels of gonorrhea in the male, the state of affairs would be so much better than they really are. These gonorrheal sufferers marry nearly always before they are completely cured. Now, if gonorrhea in the female manifested its ravages as it does in the male, how much more fortunate for all concerned. The female urethra is rarely affected. The vaginal walls resist the gonococcus with almost unvarying success, but the endometrium falls an easy prey. When the germ has reached this citadel of safety from successful medication it holds out a defiance to the genito-urinary surgeon that makes him quake with disgustful awe.

Of gonorrhea in the female, Lydston has to say: "The more carefully we study pelvic diseases in women the narrower their etiologic field becomes, and the more frequently they are found to be dependent upon gonorrhea.

Thus, when freed from pathologic and anatomic errors, pelvic inflammations are found to be dependent in the majority of cases, if not all, upon tubal diseases, and tubal disease is unquestionably almost always due to gonorrhea and its congeners or derivatives." I am quite sure that the most cases of "one child sterility" are not due to a lacerated cervix or perineum, but to the ravages of gonorrhea on the generative organs.

Now as to the frequency of gonorrhea in the female we find that Noeggerath said some years ago that he questioned the husband of every woman who came under treatment, and he was of the opinion that we could apply to the dictum of Ricord that eight hundred men in one thousand have had gonorrhea, and that he believed 90 per cent. of cases remained uncured, and that he believed of every one hundred women who have married men formerly affected by gonorrhea hardly 10 per cent. remained well; the others are affected by ailments consequent upon gonorrhea.

Here is a picture from life that is seen often by every practicing physician: A youth has harvested from his crop of wild oats just a case of gonorrhea. He is treated by a so-called genito-urinary surgeon. He is unwarned of the breakers ahead, and he leads to the hymeneal altar a fair young bride. She is the idol of her home, as innocent of evil as when an infant on the mother's breast. Often in a few short days of bliss the fire of gonorrhea begins to consume her on this altar; even before she conceives. Its ravages are so complete that she can never be a mother, and she drags out a miserable existence. She consults the most eminent specialist and all the available means are expended in quest of health, but none can be found. The dear relatives question the "wise dispensation of Providence" in so afflicting one so pure and inno-

cent. As she expresses it, "she rarely has an easy moment." How different if the husband had been forearmed by being forewarned and cured.

Would that this resolution could be assimilated into the moral nature of every physician on whose ears these words fall, and unto whom these lines may come. I shall henceforth use extreme diligence to inform all cases of gonorrheal patients of the gravity of the disease, and shall strive to engender into the public mind a complete abhorrence and perfect disgust for the disease.

CIRCUMCISION.

By J. H. CRAWFORD, M.D., Martin.

This is a subject in which I have long been interested. It is one to which I have given close attention since my graduation in 1900. To the profession it is in my mind of paramount importance, and it is one which should receive attention from every physician and surgeon in the country.

Of course, I do not claim to know everything there is to know with reference to circumcision, but I have seen so many bad results from the neglect thereof that I have attempted to write a paper upon the subject, and try to call the attention of the profession to the importance of early circumcision in cases where it is needed.

This subject seems to be neglected in some degree by the profession, for I have heard few papers read at our regular meetings with regard to circumcision or kindred subjects.

Now, if I do no more in this paper than to merely call attention to the importance of same, then I shall have accomplished something, and my paper will not have been written in vain.

In the first place, what is circumcision? It is derived from two Latin words, viz.: *Circum,* meaning round, and *cædo,* to cut, and literally means to cut round. It means the taking away of the foreskin, or prepuce, as an operation in minor surgery.

We shall first consider the diseases, or rather the malformations of the penis, which demand surgical attention, circumcision or retraction of the foreskin or prepuce.

Now, the malformations of the penis which demand our attention in this connection are only five, viz.: Adherent prepuce, phimosis, paraphimosis, hypospadias and epispadias, the most important malformations being the two former.

Adherent prepuce: We sometimes hear this condition termed false phimosis. You will find this condition in almost all male children, and its occurrence is so very frequent that we can hardly call it a malformation. In every male infant, however, where this condition of adherent prepuce is found it should require immediate attention.

In cases where it is unnecessary to circumcise, when the prepuce is not too long, it is only necessary to retract forcibly the foreskin to completely bring the glans into view, then to remove the smegma by wiping or washing it away and cover the glans penis with a few drops of oil or sterile vaseline and then draw the skin forward over the glans. This should be repeated every day until the patient is well. Don't leave this for members of the family to do, for they will not properly attend to it. It is a delicate operation and one which causes considerable pain to the little fellow and if left to the family it will in a few days be in the same condition as before the operation.

Phimosis: This is a true malformation of the penis and it may or may not be congenital. In phimosis it is impossible to retract the prepuce over the glans. It is usually congenital, but it may be brought about by inflammation. In congenital phimosis there is retention of sebaceous matter or smegma. This in itself will start up inflammation, and you will have then adhesion of the foreskin to glans.

This form of phimosis may induce irritability of the bladder, incontinence of the urine, prolapse of the rectum

and many nervous symptoms. Later on in this paper I shall say more about the nervous symptoms.

Sometimes the degree of phimosis is so great that there is no preputial opening at all. In fact, this is the kind of case I met with in my first experience in circumcision. It was while I was serving my interneship at the Capital City Hospital of Augusta, when I had a patient, an adult, who had been suffering untold agonies as the result of a phimosis with no preputial opening. In other cases the opening is so small that they can not see any part of the glans even though you attempt to pull the prepuce back. But in most cases I find that a small portion of the glans can be brought into view by a certain amount of manipulation. Sometimes, and often it is the case, you may find a complication of phimosis in the way of an elongated prepuce, which is called hypertrophic phimosis. Where you have phimosis it is impossible in many cases to keep the organ clean and in a sanitary condition, and the want or lack of cleanliness leads to infection of different forms, and to inflammation of the glans.

Balanitis is very frequently found in infants as the result of phimosis. There are so many complications from phimosis that I can only touch upon a few in this paper. I have already referred to some.

It may be the cause of urethritis and lead to cystitis, and that to uritis, and it may seriously impair the function of the kidneys.

In consequence of the straining induced by phimosis hernia is apt to be a complication, either umbilical or inguinal. Straining also may lead to hydrocele as a result of the pressure upon the spermatic cord.

These are some of the mechanical results of phimosis, but more important than any of these are the reflex conditions coming as the result from the irritation. Many

times we find such nervous symptoms as a result simply of preputial adhesions.

The pruritus, as a result of the hyperesthetic condition, causes priapism, and hence we have masturbation, which is one of the worst habits the young can be guilty of. It saps the young life and causes many a strong mind to become weak. Early circumcision, from no other cause than this, should be done without thinking of it as being such a delicate thing to do, nor letting timidity upon the part of the physician overcome the duty to your fellow man and to your country.

Insomnia, night terrors and many other nervous symptoms may be produced.

Phimosis is a common cause of frequent micturition, one of the mechanical complications, and a great many of the symptoms of stone in the bladder. Nocturnal incontinence is a symptom with which we are all familiar, and I dare say most of us have had experience on this line of a personal nature. You will excuse me if I say that if I should ask you for your own personal experience with reference to wetting of the bed when you were a child, I should be most confident that your answer would be in the affirmative. Why is this true? Simply because of an existing phimosis or an adherent prepuce. Why is this, then, not an important subject, if all this is true?

Reflex phenomena: We come now to the reflex phenomena which may be brought about by the neglect of early circumcision. The reflex phenomena attributed to phimosis, rather to neglect of early circumcision, are not a few. My sympathy goes out to the little fellow who has been neglected so long that these nervous symptoms are brought on.

In cases where it is necessary to circumcise, do your duty, and when the little fellow becomes a man he will

thank you and his father for thus having treated him. But I was about to diverge from the reflex phenomena, which are caused by phimosis or adherent prepuce.

Foremost among these are epilepsy, convulsions, neurasthenia, pseudo-paralysis, chorea, muscle spasms, strabismus and amaurosis.

These nervous diseases are included in the functional nervous troubles of childhood. Sometimes we fail, however, to make the proper diagnosis in patients suffering from some nervous disease by saying it is due to phimosis. Not all nervous diseases can be attributed to this malformation of the penis. But I say, gentlemen, when you are called to see a patient, and if you see it is nervous and irritable find out if it is a male. If so, look for an adherent prepuce or phimosis. It will be well for us all to remember *that* one point in trying to come to a conclusion as to what is the real source of the disease. It is a serious thing to neglect a weak, anemic child who shows symptoms of a nervous temperament by letting the phimosis exist. *Circumcise! Circumcise!!*

Some children have an elongated prepuce and a phimosis without giving them any unpleasantness. This is only true with reference to very healthy children, but later in life it is apt to give them trouble, trouble of a very serious nature, as was the case with my first patient whom I circumcised in the city hospital here in this city, some years ago.

Operation: My method of operation is to first prepare the field by asepticizing after anesthetizing; either a local anesthetic or a general anesthetic may be used. This depends upon the concomitant circumstances. With a couple of hemostatic forceps grasp the foreskin above and below and make a slight traction. Catch the prepuce where it is desired to be cut with another forceps horizon-

tally, and cut off the redundant prepuce. Now I trim away another small amount of the mucous membrane, say one-half to three-fourths of an inch from the corona glandis, then stitch the mucous membrane to the skin with catgut and dress with sterile gauze.

CONSTITUTION AND BY-LAWS

OF THE

Medical Association of Georgia.

CONSTITUTION.

ARTICLE I.—NAME OF THE ASSOCIATION.

The name and title of this organization shall be the Medical Association of Georgia.

ARTICLE II.—PURPOSES OF THE ASSOCIATION.

The purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the State of Georgia; to extend medical knowledge and advance medical science; to elevate the standard of medical education, and to secure the enactment and enforcement of just medical laws; to promote friendly intercourse among physicians; to guard and foster the material interests of its members and to protect them against imposition; and to enlighten and direct public opinion in regard to the great problems of State medicine, so that the profession shall become more capable and honorable within itself, and more useful to the public, in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.—COMPONENT SOCIETIES.

Component Societies shall consist of those county medical societies which hold charters from this Association.

ARTICLE IV.—COMPOSITION OF THE ASSOCIATION.

SECTION 1. This Association shall consist of members and delegates.

SEC. 2. *Members.* The members of this Association shall be the members of the component county medical societies, to which only white physicians shall be eligible.

SEC. 3. *Delegates.* Delegates shall be those members who are elected in accordance with this constitution and by-laws to represent their respective component societies in the House of Delegates of this Association.

ARTICLE V.—HOUSE OF DELEGATES.

The House of Delegates shall be the business body of the Association, and shall consist of (1) Delegates elected by the component county societies; (2) the Councilors, and (3) *ex officio,* the President and Secretary of this Association.

ARTICLE VI.—COUNCIL.

The Council shall consist of the Councilors, and the President and Secretary, *ex officio.* Besides its duties mentioned in the by-laws, it shall constitute the Finance Committee of the House of Delegates. Five Councilors shall constitute a quorum.

ARTICLE VII.—SECTIONS AND DISTRICT SOCIETIES.

The House of Delegates may provide for a division of the scientific work of the Association into appropriate sections, and for the organization of such Councilor District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component societies.

ARTICLE VIII.—SESSIONS AND MEETINGS.

The annual meetings shall take place on the third Wednesday in April, and at such place as shall be designated by the Association.

ARTICLE IX.—OFFICERS.

SECTION 1. The officers of this Association shall be a President, two Vice-Presidents, a Secretary-Treasurer and eleven Councilors, one from each congressional district.

SEC. 2. The officers, except the Secretary-Treasurer and Councilors, shall be elected annually. The terms of the Councilors shall be for three years, those first elected serving one, two and three years, as may be arranged, viz.: the Councilors for the first, second, third and fourth districts for three years; those for the fifth, sixth, seventh and eighth for two years; those for the ninth, tenth and eleventh for one year. The Secretary-Treasurer shall be elected for a term of five years. All these officers shall serve until their successors are elected and installed.

SEC. 3. The officers of this Association shall be elected by the Association by ballot, and without nomination, at 3 o'clock on the last day of the annual session, and no person shall be elected to any such office who is not in attendance on that annual session, and who has not been a member of the Association for the past two years. If there is no election on the first ballot, the three names receiving the highest number of ballots shall be voted on, the other names being dropped. If there is no election on second ballot, the two names receiving the highest number of ballots shall be voted on until election occurs. Delegates to the American Medical Association shall be elected at same time and in same manner.

ARTICLE X.—FUNDS AND EXPENSES.

Funds shall be raised by an equal per capita assessment on each component society. The amount of the assessment shall not exceed the sum of $3.00 per capita per annum. Funds may be appropriated by the House of Delegates to defray the expenses of the Association, for publications, and for such other purposes as will promote the welfare of the profession. All resolutions appropriating funds must be referred to the Finance Committee before action is taken thereon.

ARTICLE XI.—RATIFICATION.

The House of Delegates shall submit all questions before it to the Association for ratification.

ARTICLE XII.—THE SEAL.

The Association shall have a common seal, with power to break, change or renew the same at pleasure.

ARTICLE XIII.—AMENDMENTS.

Any amendment that may be offered to the constitution shall lie over until the next annual meeting; and for its adoption at such meeting shall require a two-thirds vote of all present and voting.

BY-LAWS.

CHAPTER I.—MEMBERSHIP.

SECTION 1. The name of a physician on the properly certified roster of members of a component society, which has paid its annual assessment, shall be *prima facie* evidence of membership in this Association.

SEC. 2. Any person who is under sentence of suspension or expulsion from a component society, or whose name has been dropped from its roll of members, shall not be entitled to any of the rights or benefits of this Association, nor shall he be permitted to take part in any of its proceedings until he has been relieved of such disability.

SEC. 3. Each member in attendance at the annual session shall enter his name on the registration book, indicating the component society of which he is a member. When his right to membership has been verified by reference to the roster of his society, he shall receive a badge which shall be evidence of his right to all the privileges of membership at that session. No member shall take part in any of the proceedings of an annual session until he has complied with the provisions of this section.

CHAPTER II.—GENERAL MEETINGS.

SECTION 1. All registered members may attend and participate in the proceedings and discussions of the General Meetings. The General Meetings shall be presided over by the President, or by one of the Vice-Presidents.

CHAPTER III.—HOUSE OF DELEGATES.

SECTION 1. The House of Delegates shall meet at 2 p.m. on the day before that fixed as the first day of the

annual session. It may adjourn from time to time as may be necessary to complete its business; provided, that its hours shall conflict as little as possible with the General Meetings. The order of business shall be arranged as a separate section of the program.

SEC. 2. Each component county society shall be entitled to send to the House of Delegates each year one delegate for every fifty members, and one for each fraction thereof, but each component society which has made its annual report and paid its assessment as provided in this constitution and by-laws shall be entitled to one delegate. Should the regular delegate from any county not be present at the meeting, the President shall appoint a substitute from that county to act.

SEC. 3. Twenty delegates shall constitute a quorum.

SEC. 4. It shall, through its officers, Council and otherwise, give diligent attention to and foster the scientific work and spirit of the Association, and shall constantly study and strive to make each annual session a stepping-stone to future ones of higher interest.

SEC. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent on the profession, and shall use its influence to secure and enforce all proper medical and public-health legislation, and to diffuse popular information in relation thereto.

SEC. 6. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse among physicians of the

same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influence.

Sec. 7. It shall encourage post-graduate and research work, as well as home study, and shall endeavor to have the results utilized and intelligently discussed in the county societies.

Sec. 8. It shall divide the State into Councilor Districts, one for each congressional district, and, when the best interest of the Association and profession will be promoted thereby, organize in each a district medical society, and all members of component county societies and no others shall be members in such district societies.

Sec. 9. It shall have authority to appoint committees for special purposes from among members of the Association who are not members of the House of Delegates. Such committees shall report to the House of Delegates and may be present and participate in the debate thereon.

Chapter IV.—Duties of Officers.

Section 1. The President shall preside at all meetings of the Association and of the House of Delegates; shall appoint all committees not otherwise provided for, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit, by appointment, the various sections of the State and assist the Councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. The Vice-Presidents shall assist the President in the discharge of his duties. In the event of the President's death, resignation, or removal, the Vice-Presidents, in their order, shall succeed him.

SEC. 3. The Secretary-Treasurer shall give bond in the sum of $1,000. He shall demand and receive all funds due the Association, together with the bequests and donations. He shall pay money out of the treasury only on a written order of the President.

SEC. 4. The Secretary-Treasurer shall attend the General Meetings of the Association and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record-books. He shall be *ex officio* Secretary of the Council. He shall be custodian of all record-books and papers belonging to the Association. He shall provide for the registration of the members and delegates at the annual session. He shall, with the co-operation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and, on request, shall transmit a copy of this list to the American Medical Association. He shall aid the Councilors in the organization and improvement of the county societies and in the extension of the power and usefulness of this Association. He shall conduct the official correspondence, notifying members of meetings, officers of their election and committees of their appointment and duties. He shall employ such assistants as may be ordered by the House of Delegates with the approval of the Association, and shall make an annual report to the Association. He shall supply each component society with the necessary blanks for making their annual reports; shall keep an account with the component societies, charging against each society its assessment and collect the same. Acting with the Committee on Scientific Work, he shall prepare and issue all programs. The amount of his salary shall be fixed by the Association.

CHAPTER V.—COUNCIL.

SECTION 1. The Council shall meet on the day preceding the annual session and daily during the session, and at such other times as necessity may require, subject to the approval of the President. It shall meet on the last day of the annual session of the Association to organize and outline work for the ensuing year. It shall elect a chairman and clerk, who, in the absence of the Secretary of the Association, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates.

SEC. 2. Each Councilor shall be organizer and peacemaker for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exist, for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his work, and of the condition of the profession of each county in his district at the annual session of the House of Delegates. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates on a proper itemized statement, but this shall not be construed to include his expense in attending the annual session of the Association.

SEC. 3. The Council shall be the Board of Censors of the Association. It shall consider all questions involving the right and standing of members, whether in relation to other members, to the component societies, or to this Association. All questions of an ethical nature brought before the House of Delegates or the General Meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting

the conduct of members or of a component society, on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters shall be final, when ratified by the Association.

SEC. 4. In sparsely settled sections it shall have authority to organize the physicians of two or more counties into societies, to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies until such counties shall be organized separately.

SEC. 5. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions and memoirs of the Association. All money received by the Council and its agents, resulting from the discharge of the duties assigned them, must be paid to the Secretary-Treasurer of the Association. As the Finance Committee it shall annually audit the accounts of the Secretary-Treasurer and other agents of this Association and present a statement of the same in its annual report to the House of Delegates, which report shall also specify the character and cost of all the publications of the Association during the year, and the amount of all other property belonging to the Association under its control, with such suggestions as it may deem necessary. In the event of a vacancy in the office of the Secretary-Treasurer, the Council shall fill the vacancy until the next annual election.

CHAPTER VI.—COMMITTEES.

SECTION 1. The standing committees shall be as follows:

A Committee on Scientific Work.

A Committee on Public Policy and Legislation.

A Committee on Arrangements, and such other committees as may be necessary.

SEC. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary-Treasurer shall be one, and shall determine the character and scope of the scientific proceedings of the Association for each session. Thirty days previous to each annual session it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented.

SEC. 3. The Committee on Public Policy and Legislation shall consist of three members and the President and Secretary. Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of public health and of scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, State and national affairs and elections.

SEC. 4. The Committee on Arrangements shall be appointed by the component society in which the annual session is to be held. It shall provide suitable accommodations for the meeting-places of the Association and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary-Treasurer for publication in the program, and shall make additional announcements during the session as occasion may require.

CHAPTER VII.—COUNTY SOCIETIES.

SECTION 1. All county societies now in affiliation with this Association, or those which may hereafter be organ-

ized in this State, which have adopted principles of organization not in conflict with this constitution and by-laws, shall, on application, receive a charter from and become a component part of this Association.

SEC. 2. As rapidly as can be done after the adoption of this constitution and by-laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

SEC. 3. Charters shall be issued only on approval of the Council, and shall be signed by the President and Secretary of this Association. The Association shall have authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this constitution and by-laws.

SEC. 4. Only one component medical society shall be chartered in any county.

SEC. 5. Each county society shall judge of the qualification of its own members, but, as such societies are the only portals to this Association, every reputable and legally registered white physician who does not practice or claim to practice, nor lend his support to, any exclusive system of medicine, shall be eligible to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

SEC. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right to appeal to the Council, and its decision shall be final, when ratified by the Association.

SEC. 7. In hearing appeals the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts, but in case of every appeal, both

as a Board and as individual Councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

SEC. 8. When a member in good standing in a component society moves to another county in this State, his name, on request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

SEC. 9. A physician living on or near a county line may hold his membership in that county most convenient for him to attend, on permission of the component society in whose jurisdiction he resides.

SEC. 10. Each component society shall have general direction of the affairs of the profession in its county, and its influence shall be constantly exerted for bettering the scientific, moral and material condition of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

SEC. 11. At some meeting in advance of the annual session of this Association, each county society shall elect a delegate or delegates to represent it in the House of Delegates of this Association, in the proportion of one delegate to each fifty members, or fraction thereof, and the Secretary of the society shall send a list of such delegates to the Secretary of this Association, at least ten days before the annual session.

SEC. 12. The Secretary of each component society shall keep a roster of its members, and of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State, and such other information as may be deemed necessary. In

keeping such roster the Secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report he shall be certain to account for every physician who has lived in the county during the year.

SEC. 13. The Secretary of each component society shall forward its assessment, together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county, to the Secretary of this Association each year thirty days before the annual session.

SEC. 14. Any county society which fails to pay its assessment, or make the report required, on or before April 1 of each year, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the Association, or of the House of Delegates until such requirement has been met.

CHAPTER VIII.—MISCELLANEOUS.

SECTION 1. No address or paper before the Association shall occupy more than twenty minutes in its delivery; and no member shall speak longer than five minutes, nor more than once on any subject, except by unanimous consent.

SEC. 2. All papers read before the Association, or any of the sections, shall become its property. Each paper shall be deposited with the Secretary when read.

SEC. 3. The deliberations of this Association shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this constitution and by-laws.

Chapter IX.

The present membership of the Association shall constitute the nucleus in their respective counties for the organization of county societies. They shall have a preliminary organization and invite all reputable white physicians in their county to join them in forming a permanent organization. At the meeting for permanent organization they shall elect officers and adopt a constitution and by-laws, the same not to conflict with that of the State Association. Those counties not now having membership in the State Association may call a meeting of the regular white physicians, organize a society and secure a charter from the Secretary of the State Association.

Chapter X.—Amendments.

These by-laws may be amended at any annual session by a majority vote of the Association, after the amendment has laid on the table for one day.

ROLL OF MEMBERS

OF THE

MEDICAL ASSOCIATION OF GEORGIA.

Those counties marked with an asterisk have formed county societies, and all names given in such counties are members of the county society. In those counties not marked, societies have not yet been formed, but probably will be before the next meeting of the Association.

Members are earnestly requested to inform the secretary-treasurer of any errors which will of necessity be found this year.

APPLING COUNTY.

Jas. E. Overstreet.....Baxley.
W. C. Pirkle.....Baxley.
J. L. Weaver.....Baxley.

*BALDWIN COUNTY.

H. D. Allen.....Milledgeville.
J. P. Atkinson.....Milledgeville.
J. A. Callaway.....Milledgeville.
J. B. Carter.....Milledgeville.
J. G. Croley.....Milledgeville.
W. A. Ellison.....Milledgeville.
E M. Green.....Milledgeville.
T. M. Hall .....Milledgeville.
T. E. Hubert, Sec'y.....Meriwether.
R. V. Lamar.....Milledgeville.

G. A. Lawrence.....Milledgeville.
Y. A. Little.....Milledgeville.
J. W. Mobley.....Milledgeville.
O. F. Moran.....Milledgeville.
T. B. Perry.....Milledgeville.
T. O. Powell.....Milledgeville.
R. C. Swint.....Milledgeville.
N. P. Walker.....Milledgeville.
J. M. Whitaker.....Milledgeville.

*BANKS COUNTY.

O. N. Harden.....Homer.
W. P. Harden, Sec'y.....Commerce, R. F. D.
V. D. Lockhart.....Maysville.
F. M. Lothridge.....Baldwin.
J. D. Rice.....Homer.
T. G. Underwood.....Maysville.

*BARTOW COUNTY.

R. E. Adair.....Taylorsville.
T. L. Arnold.....Kingston.
G. W. Battle.....Cassville.
J. P. Bowdoin.....Adairsville.
J. D. Bradley.....Kingston.
R. S. Bradley.....Folsom.
O. H. Buford.....Cartersville.
A. T. Calhoun.....Cartersville.
W. H. Carr.....Pinelog.
C. M. Chamlee, Sec'y.....Adairsville.
A. B. Greene.....Cartersville.
W. C. Griffin.....Cartersville.
T. Lowry .....Euharlee.
D. H. Monroe.....Emerson.
W. Redwine .....Cassville.
R. J. Trippe.....Cartersville.

F. V. Turk.....Stilesboro.
W. B. Vaughan.....Ferrobutte.
R. E. Wilson.....Graisdale.
F. R. Calhoun (honorary)....Cartersville.

* BERRIEN COUNTY.

P. H. Askew.....Nashville.
L. A. Carter.....Nashville.
W. M. Clements.....Lenox.
S. G. Ethridge.....Sparks.
F. P. Key, Sec'y.....Nashville.
L. B. Lovett.....Sparks.
W. P. Lovvorn.....Cecil.
W. A. Moore.....Alapaha.
G. A. Paulk.....Alapaha.
W. M. Shepard.....Sparks.
J. A. Ward.....Nashville.
R. C. Woodward.....Adel.

* BIBB COUNTY.

I. H. Adams.....Macon.
R. B. Barron.....Macon.
J. H. Bradley.....Macon.
A. M. Burt.....Macon.
N. T. Carswell.....Macon.
M. A. Clark.....Macon.
J. W. Cowart.....Walden.
F. M. Cunningham.....Macon.
H. P. Derry.....Macon.
E. B. Elder.....Macon.
N. G. Gewinner.....Macon.
O. C. Gibson.....Macon.
B. S. Gostin.....Macon.
T. H. Hall.....Macon.

C. C. Harrold.....Macon.
E. D. Hope.....Macon.
H. L. Howard.....Macon, R. F. D.
Max Jackson .....Macon.
F. C. Johnston.....Walden.
W. G. Lee.....Macon.
W. J. Little.....Macon.
J. C. McAfee.....Macon.
W. W. McDowell.....Macon.
H. McHatton.....Macon.
Mary E. McKay.....Macon.
J. M. Moore.....Macon.
K. P. Moore.....Macon.
S. P. Ousley.....Macon.
S. B. Palmer.....Macon.
C. H. Peete.....Macon.
W. C. Pumpelly.....Macon.
G. W. Roberson.....Macon.
J. T. Ross.....Macon.
W. P. Rushin.....Macon.
J. A. Selden.....Macon.
J. H. Shorter.....Macon.
M. M. Stapler.....Macon.
J. S. Sullivan.....Macon.
O. H. Weaver, Sec'y.....Macon.
F. L. Webb .....Macon.
H. J. Williams.....Macon.
W. H. Whipple.....Macon.
J. F. Wright .....Macon.

BROOKS COUNTY.

G. D. Dorough.....Quitman.
S. S. Gaulden.....Quitman.
E. L. Jelks.....Quitman.
S. E. Sanchez.....Quitman.

BRYAN COUNTY.

J. O. Strickland.....Pembroke.
W. J. Williams.....Pembroke.

BULLOCH COUNTY.

M. M. Holland.....Statesboro.
W. D. Kennedy.....Metter.
M. M. Lively.....Statesboro.
J. Z. Patrick.....Statesboro.
R. L. Sample.....Statesboro.
J. B. Warnell.....Adabelle.
W. D. Woods.....Lon.

BURKE COUNTY.

J. C. Brigham.....Girard.
T. A. Baxton.....Girard.
M. O. Fulcher.....Waynesboro.
E. A. Harris.....Midville.
H. B. McMaster.....Waynesboro.
C. T. Milner.....Waynesboro.
A. M. Torbit.....St. Clair.

*BUTTS COUNTY.

B. F. Aiken.....Jenkinsburg.
C. A. Butner.....Jackson.
B. L. Byron.....Jackson.
H. W. Copeland, Sec'y.....Jackson.
J. E. Hanna.....Jackson.
J. W. Harper.....Jackson, R. F. D.
J. A. Jarrell.....Jackson.
W. H. Smith, Jr.....Jackson.
W. H. Steele.....Jackson, R. F. D.
J. M. Thaxton.....Jackson.
W. J. Waits.....Flovilla.
B. F. Watkins, Jr.....Jackson, R. F. D.
O. C. Webb.....Jenkinsburg.
A. F. White.....Flovilla.

* CALHOUN COUNTY.

N. E. Benson.....Morgan.
L. B. Farmer.....Elmodel.
E. P. Griffin.....Leary.
P. E. Griffin.....Leary.
C. J. Jenkins.....Edison.
J. McReagan .....Morgan.
H. L. Miller.....Arlington.
W. M. Riley.....Arlington.
W. E. Saunders.....Arlington.
C. K. Sharp, Sec'y.....Arlington.

CAMDEN COUNTY.

* CAMPBELL COUNTY.

Campbell and Clayton counties, together with the southern portion of Fulton, have organized a medical society, known as the South Fulton, Clayton and Campbell County Medical Society, with following members:

C. T. Cannon.....Jonesboro.
J. S. Cousins.....Jonesboro.
C. M. Curtis.....College Park.
J. H. Dennard, Sec'y.....East Point.
J. J. Foster.....College Park.
J. T. Henley.....College Park.
E. W. Hawkins.....College Park.
J. T. Longino.....Fairburn.
E. P. Mixon.....East Point.
E. P. Overby.....East Point.

* CARROLL COUNTY.

F. E. Andrews.....Clem.
C. L. Baskin.....Temple.
Homer Boatwright.....Carrollton.

F. M. Brock ..... Carrollton, R. F. D.
G. W. Burnett..... Whitesburg.
J. B. Camp..... Carrollton.
J. R. M. Carter..... Carrollton.
J. F. Cole, Sec'y..... Carrollton.
B. L. Embry..... Villa Rica.
W. L. Fitts..... Carrollton.
W. W. Fitts..... Carrollton.
H. J. Goodwin..... Roopville.
J. C. Griffies..... Carrollton, R. F. D.
M. M. Hallum..... Carrollton.
J. D. Hamrick..... Carrollton.
R. L. King..... Carrollton, R. F. [illegible]
J. L. Lovvorn..... Bowden.
W. H. Malone..... Mt. Zion.
H. R. Marchman ..... Villa Rica.
J. A. Martin..... Mt. Zion.
B. R. Moore..... Temple.
B. C. Powell..... Villa Rica.
J. A. Reeves..... Whitesburg.
T. E. Rogers..... Carrollton.
J. R. Sewell..... Carrollton.
J. C. Smith..... Carrollton, R. F. D.
T. M. Spruell..... Temple.
M. H. Stephens..... Bremen.

CATOOSA COUNTY.

No members.

CHARLTON COUNTY.

No members.

*CHATHAM COUNTY.

H. P Adams..... Savannah.
W. H. Adams..... Savannah.

A. L. R. Avant.....Savannah.
J. O. Baker.....Savannah.
Craig Barrow.....Savannah.
G. O. Brinkley.....Savannah.
W. F. Brunner.....Savannah.
J. N. Carter.....Savannah.
T. J. Charlton.....Savannah.
T. S. Clay.....Savannah.
J. F. Chisholm .....Savannah.
Martin Cooley .....Savannah.
E. R. Corson.....Savannah.
B. D. Courshon.....Savannah.
M. X. Corbin.....Savannah.
W. B. Crawford.....Savannah.
J. A. Crowther.....Savannah.
W. R. Dancy.....Savannah.
J. W. Daniel.....Savannah.
M. F. Dunn.....Savannah.
J. L. Farmer.....Savannah.
St. J. B. Graham.....Savannah.
H. W. Hesse, Sec'y.....Savannah.
J. L. Hiers.....Savannah.
J. S. Howkins.....Savannah.
J. L. Jackson.....Savannah.
J. G. Jarrell.....Savannah.
G. H. Johnson .....Savannah.
Jabez Jones.....Savannah.
R. S. Kenan.....Savannah.
R. Lattimore.....Savannah.
J. L. Lee.....Savannah.
Lawrence Lee.....Savannah.
W. W. Lee.....Savannah.
J. C. LeHardy.....Savannah.
H. H. Martin.....Savannah.

H. H. McGee.....Savannah.
A. A. Morrison.....Savannah.
G. M. Norton.....Savannah.
W. E. Norton.....Savannah.
E. H. Nichols.....Savannah.
W. W. Owens.....Savannah.
E. S. Osborne .....Savannah.
B. P. Oliveros.....Savannah.
B. S. Purse.....Savannah.
J. T. Rogers.....Savannah.
A. B. Simmons.....Savannah.
J. M. Sigman.....Savannah.
Chas. Silverman.....Savannah.
Parish Smith.....Savannah.
J. A. Stothart.....Savannah.
Ralph Thomson.....Savannah.
J. K. Train.....Savannah.
M. R. Thomas.....Savannah.
T. P. Waring.....Savannah.
F. Wahl.....Savannah.
A. W. Winders.....Savannah.
G. R. White.....Savannah.
W. S. Wilson.....Savannah.
J. Weichselbaum.....Savannah.

CHATTAHOOCHEE COUNTY.

No members.

CHATTOOGA COUNTY.

W. J. Bryant.....Summerville.

*CHEROKEE COUNTY.

J. M. Bates, Sec'y.....Canton.
G. D. Blackwell.....Canton.
J. R. Boreing.....Holly Springs.

W. L. Dean.....Woodstock.
S. A. Harbin.....Canton, R. F. D.
M. G. Hendrix.....Ball Ground.
Jas. Mayhugh.....Sutallee.
R. M. Moore.....Waleska.
W. H. Perkinson.....Woodstock.
J. M. Turk.....Canton.
J. P. Turk.....Canton.
T. W. West.....Ball Ground.

*CLARKE COUNTY.

S. C. Benedict .....Athens.
J. C. Bloomfield.....Athens.
F. W. Coile.....Winterville.
W. B. Conway.....Athens.
C. C. Echols.....Whitehall.
H. M. Fullilove, Sec'y.....Athens.
I. H. Goss.....Athens.
A. C. Holliday.....Athens.
M. F. Mathews.....Athens.
J. P. Proctor.....Athens.
B. O. Quillian.....Athens.

*CLAY COUNTY.

R. T. Crozier, Sec'y.....Ft. Gaines.
C. P. Holmes.....Ft. Gaines.
J. T. Mandeville.....Ft. Gaines.
W. J. Tatum.....Ft. Gaines.
W. C. Wimberly.....Ft. Gaines.

*CLAYTON COUNTY.

Clayton county combined with Campbell and a portion of Fulton to form the South Fulton, Clayton and Campbell County Medical Society. Names of members will be found under Campbell County.

CLINCH COUNTY.

G. O. Allen.....Fargo.
W. B. Hamby.....Fargo.
J. A. Moore.....Dupont.

*COBB COUNTY.

E. M. Bailey.....Acworth.
G. L. Ezzard.....Roswell.
W. C. Humphries.....Acworth.
W. M. Kemp.....Marietta.
J. E. Lester.....Kennesaw.
J. D. Malone.....Marietta.
J. D. Middlebrooks.....Powder Springs.
W. A. Miller, Sec'y.....Marietta.
C T. Nolan .....Marietta.
H. V. Reynolds.....Marietta.
J. H. Simpson.....Marietta.
J. M. Strickland.....Marietta.
G. Tennent (honorary).....Marietta.
W. D. Wright.....Marietta, R. F. D.

COFFEE COUNTY.

S. L. McElroy.....Willacoochee.
J. M. McDonald.....McDonald.
D. H. Meeks.....Nichols.
I. W. Moorman.....Ambrose.
W. F. Sibbett.....Douglas.
S. L. Vincen .....Nichols.

*COLQUITT COUNTY.

Lee Bond .....Barney.
E. Daniel .....Moultrie.
J. H. Hall.....Moultrie.
W. J. Hicks.....Moultrie.
W. S. Howell.....Moultrie.

W. L. Jerkins.....Moultrie.
R. C. Lindsey, Sec'y .....Moultrie.
G. G. Tyson.....Funston.
J. I. Wilson.....Moultrie.

COLUMBIA COUNTY.

Combined with Richmond.

F. H. Phillips.....Harlem.
Z. McD. Story.....Winfield.
(express office, Thomson)

*COWETA COUNTY.

T. S. Bailey, Sec'y..... .Newnan.
A. A. Barge.....Newnan.
J. L. Barge.....Newnan.
F. M. Brantley (honorary)...Senoia.
J. M. Couch.....Moreland.
W. F. Culpepper.....Senoia.
T. B. Davis.....Newnan.
R. E. Foster..... .....Sharpburg.
A. R. Hogg.....Grantville.
J. C. Jackson.....Newnan.
T. J. Jones.....Newnan.
E. L. Merrill .....Turin.
A. C. North.....Newnan.
Paul Penniston.....Newnan.
J. W. Quillian.....Newnan.
J. C. Stovall.....Turin.
W. H. Tanner.....Newnan.
W. A. Turner.....Newnan.
G. E. Weems.....Newnan.

CRAWFORD COUNTY.

J. L. LeSueur.....Roberta.
W. T. Smith.....Robley.

CRISP COUNTY.

W. E. Edwards.....Cordele.
V. O. Harvard.....Arabi.
T. J. McArthur.....Cordele.

DADE COUNTY.

No members.

DAWSON COUNTY.

No members.

*DECATUR COUNTY.

V. Berry.....Bainbridge.
G. Chason.....Bainbridge.
J. D. Chason.....Bainbridge.
H. H. Cheatham, Sec'y.....Bainbridge.
S. J. Chestnut.....Bainbridge.
P. L. Hollingsworth.....Bainbridge.
J. E. Toole.....Bainbridge.

*DEKALB COUNTY.

W. S. Ansley, Sec'y.....Decatur.
A. A. Bagwell.....Ingleside.
J. A. Bell.....Lithonia.
J. A. Farmer.....Lithonia.
E. F. Fincher.....East Atlanta.
R. P. Glenn.....Edgewood.
G. T. Kesner.....Decatur.
F. P. Nisbet.....Kirkwood.
H. M. Smith.....Edgewood.
L. S. Smith.....Edgewood.
J. M. Tribble.....Lithonia.
A. R. Watkins.....Cross Keys
F. M. Young.....Atlanta.

* DODGE COUNTY.

Ocmulgee Medical Association.

Members from Dodge, Pulaski and Telfair counties.

G. W. Bordeaux.....Chester.
W. H. Born.....McRae.
E. C. Brown .....Hawkinsville.
D. M. Buchan.....Eastman.
W. B. Carswell.....Cochran.
C. J. Clark.....Chauncey.
J. B. Clark.....Eastman.
R. L. Forehand.....Cochran.
J. A. George.....Hawkinsville.
J. D. Herrman.....Eastman.
N. P. Jelks.....Hawkinsville.
L. C. Kimberly.....Empire.
H. S. Maloy.....Milan.
J. K. Maloy.....Milan.
W. C. Maloy .....Rhine.
J. L. Mathews.....Hawkinsville.
W. A. Mathews.....Hawkinsville.
G. W. McWhorter.....Eastman.
W. E. Miller, Sec'y.....Eastman.
R. J. Morgan (honorary)....Cochran.
Y. H. Morgan.....Cochran.
J. F. Powell.....Eastman, R. F. D.
J. W. Roland.....Cochran.
J. R. Rose.....Eastman.
A. A. Smith.....Hawkinsville.
A. L. Smith.....Empire.
H. J. Smith.....McRae.
S. P. Smith.....Younker.
J. J. Stone.....Hawkinsville.
C. E. Taylor.....Cochran.

T. D. Walker.....Cochran.
R. L. Whipple.....Cochran.
A. L. Wilkins.....Eastman.

*DOOLY COUNTY.

South Georgia Medical Association.

Members from Dooly and Crisp counties.

T. F. Bivins.....Vienna.
F. M. Bruce.....Pineview.
D. H. Calhoun.....Seville.
Byron Daniel.....Cordele.
E. B. Davis.....Byronville.
J. N. Dorminy.....Seville.
W. N. Edenfield.....Pinehurst.
W. E. Edwards.....Cordele.
J. T. Gammage.....Pineview.
Archie Griffin.....Luke.
V. O. Harvard.....Arabi.
A. R. Heyward.....Warwick.
G. M. D. Hunt.....Cordele.
T. J. McArthur, Sec'y.....Cordele.
J. S. McKenzie.....Cordele.
H. A. Mobley.....Vienna.
H. B. Roberts.....Cordele.
H. H. Ship.....Finelson.
H. M. Smith.....Cordele.
R. H. Stovall.....Vienna.
O. B. Tucker.....Pitts.
F. R. Wallace.....Cordele.
J. A. Ward.....Cordele.
A. J. Whelchel.....Coney.
F. E. Williams.....Vienna.
L. O. Wooten.....Unadilla.

*DOUGHERTY COUNTY.

A. S. Bacon.....Albany.
W. W. Bacon.....Albany.
W. L. Davis.....Albany.
J. W. Hall.....Oakfield.
A. H. Hilsman.....Albany.
P. L. Hilsman.....Albany.
J. M. McCaskell.....Albany.
Hugo Robinson, Sec'y.....Albany.
L. E. Welch, Jr.....Albany.

*DOUGLAS COUNTY.

W. K. Burnett.....Winn.
R. B. Cloud, Sec'y.....Austell.
J. T. Henley.....Douglasville.
J. L. Selman.....Douglasville.
J. R. Smith.....Douglasville.
T. R. Whitley.....Douglasville.

*EARLY COUNTY.

W. H. Alexander.....Blakely.
C. R. Barksdale, Sec'y.....Blakely.
W. J. Jennings.....Blakely.
J. G. Minter.....Blakely.
W. B. Standifer.....Blakely.

ECHOLS COUNTY.

No members.

EFFINGHAM COUNTY.

B. P. Powers.....Egypt.
H. R. Tarver.....Guyton.

*ELBERT COUNTY.

F. L. Adams.....Elberton, R. F. D.
D. P. Bell.....Elberton, R. F. D.

T. W. Bond.....Elberton.
J. E. Cole.....Middleton.
J. A. Dillesham.....Bowman.
L. P. Eberhardt .....Elberton.
B. W. Hall.....Bowman.
H. B. Harper.....Harper.
A. S. Johnson.....Bowman.
J. E. Johnson.....Elberton.
A. B. Mathews.....Elberton.
A. J. Mathews.....Elberton.
W. J. Mathews, Sec'y.....Elberton.
A. S. Oliver.....Elberton.
A. C. Smith.....Elberton.
A. S. J. Stovall.....Elberton.
O. B. Walker.....Bowman.

EMANUEL COUNTY.

E. F. Coleman.....Graymont.
L. P. Lane.....Stillmore.
W. J. McNaughton.....Covena.
A. M. Rountree.....Adrian.
G. L. Smith.....Swainsboro.
G. E. Youmans.....Adrian.
J. R. Youmans.....Stillmore.
L. P. Youmans.....Swainsboro.

*FANNIN COUNTY.

J. B. Chastain.....Blue Ridge.
A. F. Christopher.....Mineral Bluff.
C. B. Crawford, Sec'y.....Blue Ridge.
J. M. Daves.....Blue Ridge.
N. C. Goss.....Cartecay.
E. L. Prince.....Morganton.
J. H. Randle.....Ellijay.
J. S. Tankersley .....Ellijay.
W. C. Thomas .....Blue Ridge.

* FAYETTE COUNTY.

W. R. Camp.....Fayetteville.
J. A. S. Chambers.....Inman.
J. A. Lester.....Fayetteville.
E. C. Seawright, Sec'y.....Fayetteville.
G. W. Wallis.....Fayetteville.
E. B. Weldon.....Inman.

* FLOYD COUNTY.

J. P. Ballenger.....Armuchee.
H. H. Battey.....Rome.
J. H. Chenney.....Silver Creek.
R. P. Cox.....Rome.
J. W. Curry.....Rome.
R. B. Cuthbert.....Rome.
Wm. DeLay .....Rome.
W. L. Funkhouser, Sec'y.....Rome.
T. R. Garlington.....Rome.
R. M. Gray.....Everett Springs.
Chas. Hamilton .....Rome.
L. P. Hammond.....Rome.
R. M. Harbin.....Rome.
W. P. Harbin.....Rome.
J. E. Iney.....Rome.
J. C. Mull.....Shannon.
J. L. Murdock.....Lindale.
I. Sewell .....Cave Springs.
W. J. Shaw.....Rome.
H. A. Turner.....Lindale.
J. C. Watts.....Rome.
R. H. Wicker.....Rome.

* FORSYTH COUNTY.

M. T. Bramlett.....Cumming.
G. P. Brice.....Flowery Branch, R. F. D.
John Hockenhull .....Cumming.
J. H. Hockenhull, Sec'y.....Cumming.
T. R. Lipscomb.....Flowery Branch, R. F. D.
W. B. Pirkle.....Flowery Branch.
A. S. Strickland.....Cumming.

* FRANKLIN COUNTY.

C. L. Ayers, Sec'y.....Carnesville.
J. H. Bowen.....Canon.
J. R. Brown.....Red Hill.
G. F. Bush.....Walnut Hill.
W. W. Cornog.....Lavonia.
J. M. Freeman.....Lavonia.
J. R. Hall .....Carnesville.
H. L. McCrary.....Royston.
J. O. McCrary.....Royston.
F. G. Moss.....Royston.
G. M. Parker.....Carnesville.
J. W. Starr.....Canon.

* FULTON COUNTY.

L. Amster .....Atlanta.
C. R. Andrews.....Atlanta.
W. T. Asher.....Atlanta.
A. Avary .....Atlanta.
J. C. Avary.....Atlanta.
J. B. Baird.....Atlanta.
E. G. Ballenger.....Atlanta.
S. T. Barnett.....Atlanta.
A. H. Baskin.....Atlanta.
C. F. Benson.....Atlanta.

M. T. Benson.....Atlanta.
E. B. Block.....Atlanta.
F. K. Boland.....Atlanta.
C. E. Boynton.....Atlanta.
J. H. Bradfield.....Atlanta.
Frances Bradley .....Atlanta.
J. N. Brawner.....Atlanta.
Geo. Brown .....Atlanta.
W. T. Brown.....Atlanta.
A. W. Calhoun.....Atlanta.
J. L. Campbell.....Atlanta.
M. G. Campbell.....Atlanta.
W. E. Campbell.....Atlanta.
E. C. Cartledge..... .Atlanta.
W. L. Champion..... ..Atlanta.
L. B. Clarke.....Atlanta.
T. J. Collier.....Atlanta.
H. P. Cooper.....Atlanta.
J. H. Crawford.....Atlanta.
J. M. Crawford.....Atlanta.
L. M. Critchton.....Atlanta.
J. D. Cromer.....Atlanta.
W. A. Crowe.....Atlanta.
E. C. Davis.....Atlanta.
H. R. Donaldson.....Atlanta.
R. T. Dorsey.....Atlanta.
J. W. Duncan.....Atlanta.
J. G. Earnest.....Atlanta.
W. S. Elkin.....Atlanta.
J. N. Ellis.....Atlanta.
W. B. Emery, Sec'y.....Atlanta.
L. C. Fischer.....Atlanta.
A. P. Flowers.....Atlanta.
A. L. Fowler.....Atlanta.

J. R. Garner.....Atlanta.
J. McF. Gaston.....Atlanta.
C. G. Giddings.....Atlanta.
W. L. Gilbert.....Atlanta.
J. M. Goldsmith.....Atlanta.
W. S. Goldsmith.....Atlanta.
S. H. Green.....Chattahoochee.
K. H. Hall.....Atlanta.
T. H. Hancock.....Atlanta.
L. S. Hardin.....Atlanta.
H. F. Harris.....Atlanta.
C. D. Heard.....Atlanta.
J. H. Hines.....Atlanta.
A. G. Hobbs.....Atlanta.
F. G. Hodgson.....Atlanta.
Michael Hoke.....Atlanta.
J. B. S. Holmes.....Atlanta.
J. W. Hooper.....Atlanta.
T. V. Hubbard.....Atlanta.
G. P. Huguley.....Atlanta.
M. McH. Hull.....Atlanta.
C. D. Hurt.....Atlanta.
J. S. Hurt.....Atlanta.
J. W. Hurt.....Atlanta.
M. B. Hutchins.....Atlanta.
W. C. Jarnagin.....Atlanta.
J. L. Jarvis.....Atlanta.
J. H. Johns.....Atlanta.
J. C. Johnson.....Atlanta.
E. G. Jones.....Atlanta.
L. H. Jones.....Atlanta.
W. T. Jones.....Atlanta.
Willis Jones.....Atlanta.
W. S. Kendrick.....Atlanta.

J. P. Kennedy.....Atlanta.
R. R. Kime.....Atlanta.
J. C. King.....Atlanta.
J. N. LeConte.....Atlanta.
H. M. Lokey.....Atlanta.
T. C. Longino.....Atlanta.
T. D. Longino.....Atlanta.
Oscar Lyndon.....Atlanta.
J. L. McDaniel.....Atlanta.
F. W. McRae.....Atlanta
P. L. Moon.....Atlanta.
W. H. Moss.....Atlanta.
C. E. Murphey.....Atlanta.
W. P. Nicolson.....Atlanta.
G. H. Noble.....Atlanta.
J. C. Olmsted.....Atlanta.
W. B. Parks.....Atlanta.
L. T. Pattillo.....Atlanta.
G. F. Payne.....Atlanta.
B. E. Pearce.....Atlanta.
W. E. Person.....Atlanta.
M. A. Purse.....Atlanta.
K. L. Reid.....Atlanta.
E. H. Richardson.....Atlanta.
R. B. Ridley, Jr.....Atlanta.
E. C. Ripley.....Atlanta.
J. B. Roberts.....Atlanta.
W. C. Roughlin.....Atlanta.
Dunbar Roy.....Atlanta.
S. A. Samuels.....Atlanta.
Annie Sawyer.....Atlanta.
W. A. Selman.....Atlanta.
W. B. Sharp.....Atlanta.
J. R. Simpson.....Atlanta.

Archibald Smith.....Atlanta.
C. A. Smith.....Atlanta
E. Smith .....Atlanta.
W. M. Smith.....Atlanta.
I. C. Smullyan.....Atlanta.
J. E. Sommerfield.....Atlanta.
L. P. Stephens.....Atlanta.
A. W. Stirling .....Atlanta.
C. C. Stockard.....Atlanta.
C. W. Strickler.....Atlanta.
F. M. Sutton.....Atlanta.
W. E. Taylor.....Atlanta.
E. C. Thrash.....Atlanta.
J. S. Todd.....Atlanta.
T. Toepel .....Atlanta.
G. C. Trimble.....East Point.
A. H. Van Dyke.....Atlanta.
E. Van Goidtsnoven.....Atlanta
S. A. Visanska.....Atlanta.
C. P. Ward.....Atlanta.
W. F. Westmoreland.....Atlanta.
W. E. Wilmerding .....Atlanta.
J. C. White.....Atlanta.
Bernard Wolff .....Atlanta.
H. S. Wright.....Atlanta.

GILMER COUNTY.

Members of the Fannin County Society

N. C. Goss .....Cartecay.
J. S. Tankersley.....Ellijay.

*GLASCOCK COUNTY.

T. J. M. Kelley.....Gibson.
B. B. Kitchens.....Mitchell.
R. T. Lasseter, Sec'y.....Gibson.

GLYNN COUNTY.

H. M. Branham.....Brunswick.
C. H. Meldrim.....St. Simon's Mill.

*GORDON COUNTY.

D. J. Borders.....Red Bud.
W. A. Borders.....Sonoraville.
W. Con .....Sugar Valley.
J. M. Erwin.....Calhoun.
W. B. Floyd.....Planeville.
C. F. McClain.....Calhoun.
G. W. Mills, Sec'y.....Calhoun.
J. E. Pritchard.....Resaca.
W. A. Richards.....Calhoun.

GRADY COUNTY.

*GREENE COUNTY.

E. G. Adams, Sec'y.....Greensboro.
W. E. Adams.....Greensboro.
J. C. Ashburn.....Greensboro.
J. L. Durham .....Woodville.
J. H. Gheesling .....Greensboro.
C. C. King.....White Plains.
J. R. Robins.....Siloam.

*GWINNETT COUNTY.

C. E. Davenport.....Buford.
P. F. Dickens .....Duluth.
W. T. Hinton .....Dacula.

N. H. Pierce.....Suwanee.
W. W. Power.....Buford.
J. W. Quillian.....Buford.
W. J. Rowe.....Buford.
O. O. Simpson.....Norcross.
W. P. Walker.....Norcross.
B. V. Wilson, Sec'y.....Dacula.
J. P. Woodward .....Lawrenceville.

* HABERSHAM COUNTY.

J. K. Burns .....Clarkesville.
J. W. Crawford, Sec'y.....Cornelia.
G. C. Erwin ... ...Young Harris.
J. B. Jackson .....Clarkesville.
S. R. Rogers.....Mt. Airy.
O. T. White..... Mt. Airy.

* HALL COUNTY.

J. W. Bailey.....Gainesville.
W. R. Barnwell.....Oakwood.
A. J. Cavinder.....Dahlonega.
D. J. Cobb .....Flowery Branch.
J. H. Downey.....Gainesville.
T. C. Gower.....Gainesville.
E. P. Ham.....Gainesville.
W. G. Ham.....Ganiesville.
J. A. Kitchens.....Gainesville.
W. W. Lisle.....Oakwood.
W. B. Lockhart.....Belton.
J. D. Mauldin .....New Holland.
R. L. Neal.....Gainesville.
W. A. Palmour.....Gainesville.
P. E. B. Robertson, Sec'y.....Gainesville.
J. B. Rudolph.....Gainesville.

H. L. Rudolph.....Gainesville.
G. W. Scroggs.....Oakwood.
K. A. Smith.....Gainesville.

HANCOCK COUNTY.

R. A. Cason .....Jewell.
C. S. Jernigan .....Sparta.
J. L. Kirkendol .....Jewell.
G. R. Patillo .....Culverton.
H. L. Ray.....Devereaux.

HARALSON COUNTY.

No members.

* HARRIS COUNTY.

W. H. Campbell.....Chipley.
W. C. DeLamar .....Mt. Hill.
W. E. Farley, Sec'y.....Hamilton.
J. L. Riley .....Hamilton.
J. L. Sappington.....Whitesville
V. G. Williams.....Chipley.

HART COUNTY.

G. S. Clarke.....Hartwell.
A. P. Hanie .....Hartwell.
I. L. McCurry .....Hartwell.
B. C. Teasley .....Hartwell.
H. E. Thornton .....Hartwell.

HEARD COUNTY.

C. M. Mickle .....Texas.

* HENRY COUNTY.

J. G. Campbell.....McDonough.
J. A. Combs.....Locust Grove.
B. E. Horton .....Flippen.

N. J. Langston.....Luella.
C. D. McDonald.....McDonough.
A. R. Scott.....McDonough.
D. W. Scott.....McDonough.
J. G. Smith, Sec'y.....McDonough.
C. L. Tucker.....McDonough.
J. E. Woods.....McDonough, R. F. D.

HOUSTON COUNTY.

R. L. Cater.....Perry.
J. D. Coleman.....Henderson.
J. T. Coleman.....Perry.
J. O. Mann.....Elko.
O. G. Singleton.....Fort Valley.
J. B. Smith.....Perry.

*IRWIN COUNTY.

W. C. Ashley.....Ocilla.
T. E. Bradley.....Osierfield.
W. J. Dismuke.....Irwinville.
E. J. Dorminy.....Fitzgerald.
W. D. Dorminy.....Fitzgerald.
J. C. Fussell.....Fitzgerald.
J. B. George.....Ocilla.
J. E. Goethe.....Ocilla.
A. Harper.....Wray.
J. R. Howell.....Ocilla.
J. C. Luke.....Ocilla.
L. S. Osborne, Sec'y.....Fitzgerald.
E. A. Russell.....Fitzgerald.
F. D. Thompson.....Fitzgerald.
D. B. Ware.....Fitzgerald.
C. B. White.....Fitzgerald.
T. E. White.....Fitzgerald.
C. H. Wilcox.....Irwinville.

* JACKSON COUNTY.

L. C. Allen.....Hoschton.
C. B. Almond.....Winder.
J. C. Bennett.....Jefferson.
C. O. Brock.....Jefferson.
J. A. Bryan, Sec'y.....Pendergrass.
J. G. Elder.....Jefferson.
L. G. Hardman.....Commerce.
W. B. Hardman.....Commerce.
W. L. Hood.....Nicholson.
F. M. Hubbard.....Commerce.
M. F. Nelms.....Commerce.
H. P. Quillian.....Commerce.
S. T. Ross.....Winder.
L. Sanders .....Commerce.
O. E. Shankle.....Commerce.
L. J. Sharp.....Commerce.
S. J. Smith.....Jefferson.
A. D. White.....Pendergrass.

JASPER COUNTY.

W. M. Bullard.....Monticello.
J. G. Coile.....Monticello.
L. M. Ellis.....Monticello.
H. E. Ezzell.....Monticello.

* JEFFERSON COUNTY.

G. T. Brown.....Wadley.
W. B. Holmes.....Wadley.
P. Hubert.....Louisville.
G. W. Kitchens.....Avera.
O. T. Lasseter.....Spread.
J. W. Pilcher.....Stellaville.

C. H. Raley.....Wrens.
J. C. Raley.....Avera.
C. G. Todd, Sec'y.....Wrens.

JEFF DAVIS COUNTY.

JENKINS COUNTY.

L. J. Belt.....Millen.
E. F. Jones.....Herndon.
H. A. Jones.....Millen.

JOHNSON COUNTY.

J. W. Brinson.....Wrightsville.
S. M. Johnson.....Wrightsville.

*JONES COUNTY.

J. F. Anderson .....Clinton.
J. W. Anderson.....Clinton.
H. L. Anchors, Sec'y .....Haddock.
John Hardeman.....Haddock.
S. B. Poland.....Gray.
T. A. White.....Round Oak.

*LAURENS COUNTY.

W. R. Brigham, Sec'y .....Dublin.
F. Bright.....Dublin.
J. R. Buchan.....Mullis.
J. G. Carter.....Scott.
R. J. Chappell.....Dudley.
T. H. Hall.....Dudley.
E. New .....Dudley.
J. M. Page.....Dudley.
H. Rushin .....Dudley.
W. C. Sessoms.....Brewton.
R. H. Stanley.....Dublin.
W. B. Taylor.....Dexter.

L. J. Thomas.....Dublin.
M. D. Vickers.....Lallie.
S. Walker .....Dublin.
J. L. Weddington.....Dublin.

LEE COUNTY.

W. T. Simpson.....Smithville.
H. Smith .....Smithville.

*LINCOLN COUNTY.

J. J. Burch.....Double Branches.
W. B. Crawford.....Lincolnton.
H. L. Culbertson.....Amity.
W. H. Estes.....Leathersville.
J. C. Groves, Sec'y.....Lincolnton.
T. P. Mitchell.....Lincolnton.

LOWNDES COUNTY.

A. G. Little.....Valdosta.
E. P. Quillian.....Olympia.
C. T. Quinn.....Naylor.
J. M. Smith.....Valdosta.
T. M. Talbot.....Valdosta.
J. C. Wilson .....Valdosta.

LUMPKIN COUNTY.

A. H. Cavinder.....Dahlonega.
H. C. Welchel.....Dahlonega.

*M'DUFFIE COUNTY.

S. Gibson .....Thomson.
E. S. Harrison.....Thomson.
A. J. Mathews.....Thomson.
B. F. Riley, Jr., Sec'y.....Thomson.

D. A. Rodgers.....Deering.
Z. M. Story.....Winfield.
F. N. Ware.....Thomson:

M'INTOSH COUNTY.

P. S. Clark.....Darien.

MACON COUNTY.

H. C. Derrick.....Oglethorpe.
C. A. Greer.....Oglethorpe.
G. N. Niles.....Marshallville.
C. H. Richardson.....Montezuma.

* MADISON COUNTY.

J. L. Baker.....Carlton.
J. S. Daniel.....Danielsville.
O. L. Deadwyler.....Carlton.
W. D. Gholstin.....Danielsville.
A. J. Griffeth, Sec'y .....Comer.
G. W. Westbrook.....Danielsville, R. F. D.
R. J. Westbrook .....Danielsville.

MARION COUNTY.

A. S. Boyett.....Dranesville.
S. A. Murray .....Buena Vista.

* MERIWETHER COUNTY.

J. L. Dixon.....Woodbury.
W. P. Ellis.....Gay.
P. W. Fitts, Sec'y .....Greenville.
R. B. Gilbert.....Greenville.
W. H. Godwin.....Bullochville.
J. T. Latimer.....Lone Oak.
F. H. Letson.....Lone Oak.
J. W. Pinkston.....Greenville.

J. S. Snead.....St. Marks.
C. P. Stipes.....Odessadale.
E. B. Terrell.....Greenville.

* MILLER COUNTY.

E. B. Baughn, Sec'y .....Colquitt.
E. B. Bush.....Colquitt.
J. P. Cook.....Colquitt.

MILTON COUNTY.

No members.

* MITCHELL COUNTY.

J. L. Brown.....Camilla.
I. A. Bush, Jr., Sec'y.....Camilla.
O. B. Bush.....Pelham.
J. R. Clements.....Pelham.
W. S. Hill.....Pelham.
H. H. Jones.....Sale City.
F. L. Lewis.....Camilla.
C. W. Reid.....Pelham.
J. P. Sharp.....Baconton.
J. M. Spence.....Camilla.

* MONROE COUNTY.

G. L. Alexander.....Forsyth.
O. C. Collins.....Forsyth.
J. O. Elrod.....Forsyth.
R. C. Goolsby.....Juliette.
J. F. Lancaster, Sec'y.....Forsyth.
R. C. Mosely.....Bolingbroke.
W. P. Ponder.....Forsyth.
J. R. Shannon.....Cabaniss.
S. H. Smith.....Culloden.
Samuel Wilson .....Strouds.

MONTGOMERY COUNTY.

T. N. Baker.....Higgston.
M. L. Curry.....Ailey.
W. W. Evans.....Higgston.
R. L. Fox.....Mt. Vernon.
J. M. McAllister.....Mt. Vernon.
J. H. McArthur.....Long Pond.
J. W. Palmer.....Ailey.

MORGAN COUNTY.

W. E. Adams.....Madison.
J. W. Ashford.....Madison.
A. K. Bell.....Madison.
R. W. Trotter.....Madison.
J. H. Troutt .....Pennington.

MURRAY COUNTY.

No members.

* MUSCOGEE COUNTY.

B. W. Allen.....Columbus.
J. M. Baird.....Columbus.
J. M. Crook.....Columbus.
Martin Crook .....Columbus.
J. I. Darby.....Columbus.
C. A. Dexter, Sec'y.....Columbus.
W. T. Gautier.....Columbus.
C. N. Howard .....Columbus.
J. H. McDuffie.....Columbus.
T. E. Mitchell.....Columbus.
J. T. Moncrief.....Columbus.
S. E. Young.....Midland.
D. C. Ticknor.....Columbus.
C. L. Williams.....Columbus.

*NEWTON COUNTY.

N. J. Anderson.....Covington.
S. W. Everett.....Almon.
J. L. Gibson.....Covington, R. F. D.
R. L. Hollis.....Hayston.
O. L. Holmes, Sec'y.....Covington, R. F. D.
E. W. Ragsdale.....Covington.
W. M. Taylor.....Starrsville.
W. D. Travis.....Covington.
P. Wilson, Jr.....Newborn.

*OCONEE COUNTY.

J. T. Elder.....Farmington.
S. A. Elder.....High Shoals.
W. T. Haygood.....Farmington.
J. W. Hinton.....High Shoals.
E. H. Kennimer.....Bishop.
S. S. Smith.....Watkinsville.
W. M. White, Sec'y.....Watkinsville.

OGLETHORPE COUNTY.

W. D. Carter.....Winterville.
F. W. Coile.....Winterville.
W. L. Green.....Point Peter.
W. T. Nash.....Philomath.
W. H. Reynolds.....Lexington.

PAULDING COUNTY.

E. H. Robertson.....Dallas.

*PICKENS COUNTY.

W. C. McClain.....Marble Hill.
J. T. Mills, Sec'y.....Nelson.
F. C. Richards.....Jasper.
W. B. Tate.....Tate.

PIERCE COUNTY.

M. G. Chancy.....Offerman.
W. R. Moore.....Patterson.
T. E. Oden.....Blackshear.
J. H. O'Quinn.....Patterson.
W. P. Williams.....Blackshear.

* PIKE COUNTY.

J. M. Anderson.....Barnesville.
W. H. Aycock.....Williamson.
J. C. Beauchamp.....Williamson.
J. A. Corry.....Barnesville.
J. R. Graves..... Zebulon.
M. M. Head, Sec'y .....Zebulon.
A. P. Kemp.....Barnesville.
R. A. Mallory.....Concord.
G. M. McDowell.....Molena.
J. H. Phillips.....Milner.
J. M. Rogers.....Barnesville.
S. Rumble.....Barnesville.
J. O. Whatley, ...Barnesville.

* POLK COUNTY.

W. J. Adair.....Rockmart.
Wm. Bradford.....Cedartown.
W. A. Chapman.....Cedartown.
J. J. Cooper.....Cedartown.
W. G. England .....Cedartown.
J. W. Good.....Cedartown.
J. A. Liddell.....Cedartown.
C. W. Peek.....Cedartown.
J. E. Pennington.....Esom Hill.
R. N. Spinks.....Cedartown.
J. C. Trentham.....Cedartown.
C. V. Wood, Sec'y .....Cedartown.

PULASKI COUNTY.

Members of the Ocmulgee Medical Association.

E. C. Brown.....Hawkinsville.
J. M. Horne.....Finleyson.
N. P. Jelks.....Hawkinsville.
A. A. Smith.....Hawkinsville.
J. J. Stone.....Hawkinsville.

*PUTNAM COUNTY.

S. A. Clark, Sec'y .....Eatonton.
L. O. McCalla.....Eatonton.
W. B. Moore .....Eatonton.
V. H. Taliaferro.....Eatonton.
E .Y. Walker.....Willard.
J. D. Weaver .....Eatonton.

QUITMAN COUNTY.

No members.

RABUN COUNTY.

No members.

*RANDOLPH COUNTY.

T. H. Andrews .....Cuthbert.
F. G. Barfield, Sec'y.....Cuthbert.
W. W. Binion.....Benevolence.
B. E. Bridgeman .....Shellman.
A. L. Crittenden .....Shellman.
J. H. Hendry.....Shellman, R. F. D.
E. C. McCurdy .....Shellman.
G. Y. Moore.....Cuthbert.
F. D. Patterson.....Cuthbert.
F. S. Rogers.....Coleman.
W. T. Rogers.....Coleman.
A. F. Weathers.....Shellman.

*RICHMOND COUNTY.

J. E. Allen.....Augusta.
W. H. Battey.....Augusta.
G. V. Baxley.....Grovetown.
J. R. Bell.....Blythe.
C. A. Blanchard.....Augusta.
C. P. Brightwell .....Augusta.
C. P. Bryans.....Augusta.
H. Brooks.....Augusta.
J. M. Caldwell.....Augusta.
T. D. Coleman.....Augusta.
C. W. Crane.....Augusta.
A. A. Davidson.....Augusta.
A. J. Deas.....Augusta.
W. H. Doughty.....Augusta.
Hinton Eve .....Augusta.
E. C. Goodrich.....Augusta.
W. H. Goodrich.....Augusta.
J. E. Greene.....Augusta.
S. Hankinson .....Hephzibah.
W. H. Harrison, Jr.....Augusta.
W. Z. Holliday.....Augusta.
Geo. Horne .....Augusta.
W. R. Houston.....Augusta.
J. M. Hull.....Augusta.
W. C. Kellogg, Sec'y.....Augusta.
A. J. Kilpatrick.....Augusta.
Geo. Lehman .....Augusta.
Moses Levy .....Augusta.
J. R. Littleton .....Augusta.
W. C. Lyle.....Augusta.
H. H. Malone.....Augusta.
R. B. McLaws.....Augusta.

H. Michel ..... Augusta.
C. J. Montgomery ..... Augusta.
N. Moore ..... Augusta.
E. C. Morris ..... Hephzibah.
J. B. Morgan ..... Augusta.
Geo. Mountain ..... Augusta.
W. H. Mulherrin ..... Augusta.
E. E. Murphy ..... Augusta.
T. E. Oertel ..... Augusta.
F. H. Phillips ..... Harlem.
E. P. Rice ..... Augusta.
W. F. Roseboro ..... Augusta.
Jno. Schreiber ..... Augusta.
A. H. Story ..... Augusta.
L. P. Tessier ..... Augusta.
R. H. Thigpen ..... Augusta.
A. S. Tinsley ..... Augusta.
G. A. Traylor ..... Augusta.
A. C. Wade ..... Augusta.
R. J. Walton ..... Harlem.
G. A. Wilcox ..... Augusta.
J. B. Wright ..... Augusta.
T. R. Wright ..... Augusta.

ROCKDALE COUNTY.

With Newton county.

J. A. Guinn ..... Conyers.

SCHLEY COUNTY.

Members of Sumter County.

B. L. Bridges ..... Ellaville.

*SCREVEN COUNTY.

D. H. Blackburn.....Ogeechee.
L. J. Belt.....Millen.
H. W. Doster.....Rocky Ford.
E. N. Eckert.....Oliver.
W. W. Evans.....Millen.
H. E. Ezell.....Oliver.
A. D. Lewis.....Sylvania.
W. R. Lovett .....Sylvania.
Frank Mims .....Mears.
S. W. Mims.....Sylvania.
G. M. Overstreet.....Sylvania.
B. F. Powell.....Sylvania.
J. W. Powell.....Sylvania.
G. S. Roach.....Johnston's Station.
W. E. Rushing, Sec'y.....Daffin.
B. R. Saxon.....Sylvania.

*SPALDING COUNTY.

E. R. Anthony .....Griffin.
W. M. Byne.....Griffin.
M. F. Carson.....Griffin.
T. J. Collier.....Griffin.
N. B. Drewry.....Griffin.
T. E. Drewry.....Griffin.
G. F. Johnson.....Griffin.
T. J. Mitchell.....Griffin.
J. L. Moore.....Griffin.
J. T. Nunnally .....Griffin.
T. J. Phillips .....Griffin.
J. F. Stewart.....Griffin.
J. M. Thomas, Sec'y.....Griffin.

*STEPHENS COUNTY.

J. H. Crawford, Sec'y.....Martin.
Jeff Davis.....Toccoa.
J. H. Edge.....Toccoa.
H. M. Freeman.....Toccoa.
J. E. D. Isbell.....Toccoa.
Thos. H. Lyon.....Martin.
W. L. McBath.....Avalon.
W. H. Parker.....Mize.
J. H. Terrell.....Toccoa.
J. C. Verner.....Martin.

*STEWART COUNTY.

R. E. L. Barnum.....Richland.
A. G. Fort, Sec'y .....Lumpkin.
F. B. Gregory.....Lumpkin.
T. F. Harper.....Weston.
J. M. Kenyon.....Weston.
J. F. Lunsford.....Preston.
J. C. Patterson.....Lumpkin.
W. W. Peeks.....Louvale.
C. E. Pickett.....Richland.
J. B. Tanner.....Lumpkin.
J. S. Wimberly.....Lumpkin.
A. R. Wright.....Lumpkin.

*SUMTER COUNTY.

Members from Schley and Lee.

H. B. Allen, Sec'y.....Americus.
B. L. Bridges.....Ellaville.
F. L. Cato.....DeSoto.
R. E. Cato.....Americus.
T. A. Chappell.....Americus.
J. C. Fields .....Americus.

H. J. Logan.....Americus.
J. F. McMath.....Americus.
G. T. Miller.....Americus.
W. S. Prather.....Americus.
J. R. Statham.....Americus.
F. A. Thomas.....Americus.
B. T. Wise.....Plains.

TALBOT COUNTY.

W. P. Leonard.....Talbotton.

*TALIAFERRO COUNTY.

A. H. Beazley, Sec'y .....Crawfordville.
L. R. Brown.....Sharon.
A. C. Davidson.....Sharon.
R. J. Power.....Crawfordville.
A. T. Ray.....Sharon.
J. A. Rhodes.....Crawfordville.

TATTNALL COUNTY.

O. L. Alexander .....Reidsville.
J. W. Daniel .....Glennville.
S. T. Ellis .....Hagan.
J. J. Kennedy.....Collins.
J. L. McLean.....Birdford.
B. E. Miller .....Daisy.
G. W. Toattle.....Vance.

TAYLOR COUNTY.

W. W. Edwards.....Butler.
J. E. Mangham.....Reynolds.

TELFAIR COUNTY.

Has members in the Ocmulgee Medical Asssociation.

W. H. Born.....McRae.
J. L. Frazier.....McRae.

B. M. Kennon.....McRae.
H. S. Maloy.....Milan.
R. H. Mobley.....Lumber City.
L. Napier .....Lumber City.
J. W. Neal.....Scotland.

*TERRELL COUNTY.

J. T. Arnold.....Parrott.
R. E. Bowman.....Bronwood.
Guy Chappell .....Dawson.
W. B. Cheatham.....Dawson.
O. G. Cranford .....Sasser.
J. G. Dean .....Dawson.
H. W. Harris, Sec'y.....Dawson.
O. T. Kenyon.....Dawson.
L. Lamar .....Dawson.
J. H. Lewis.....Dawson.
E. C. McClennan.....Parrott.
J. W. Patterson.....Dawson.
L. Thomas .....Dover.
H. A. Wall.....Bronwood.
J. H. Williford .....Parrott.

*THOMAS COUNTY.

H. Ainsworth, Sec'y .....Thomasville.
H. C. Cook.....Thomasville.
B. A. Daniels.....Thomasville.
C. H. Ferguson.....Boston.
J. N. Isler.....Meigs.
J. H. Jenkins.....Thomasville.
H. Jones .....Cooledge.
D. C. Montgomery.....Thomasville.
J. B. Palmer.....Oclocknee.

A. P. Taylor.....Thomasville.
T. J. Taylor.....Thomasville.
H. A. Vann .....Boston.

*TIFT COUNTY.

O. Daniel, Sec'y .....Tifton.
W. G. Devane..... ..Omega.
W. H. Hendricks .....Tifton.
G. W. Holmes .....Tifton.
G. W. Julian .....Tifton.
J. A. McCrea .....Tifton.
N. Peterson.....Tifton.
F. B. Pickett .....Ty Ty.

TOOMBS COUNTY.

I. E. Aaron .....Lyons.
E. P. Bomar.....Ohoopee.
J. M. Meadows .....Vidalia.
W. F. Peacock .....Vidalia.
J. F. Webb .....Lyons.

TOWNS COUNTY.

Geo. C. Erwin .....Young Harris.
(member Habersham County Society.)

*TROUP COUNTY.

B. H. Brock .....Mountville.
B. C. Daniel .....Hogansville.
A. J. Fowler.....Hogansville.
J. H. Hardy.....LaGrange, R. F. D.
A. F. Harrington.....West Point.
R. N. Hogg.....West Point.
J. S. Horsley .....West Point.
J. S. Horsley, Jr.....West Point.
R. H. Jenkins.....Hogansville.

J. F. Jones ..... Hogansville.
R. A. Justice ..... LaGrange.
J. H. Lane..... LaGrange.
W. H. McClendon ..... Lanett, Ala.
Hugh McCulloh ..... Lanett, Ala.
D. E. Morgan ..... LaGrange.
W. E. Morgan ..... LaGrange.
R. J. O'Neal ..... Langdale, Ala.
J. M. Poer ..... West Point.
F. M. Ridley..... LaGrange.
F. M. Ridley, Jr..... LaGrange.
H. R. Slack..... LaGrange.
W. P. Smith..... Glenn.
P. A. Tatum..... West Point.
T. W. Taylor ..... West Point.
H. W. Terrell, Sec'y..... LaGrange.
A. J. Tuggle..... LaGrange.
R. P. White ..... Antioch.

*TURNER COUNTY.

W. L. Story ..... Ashburn.
T. H. Thrasher..... Ashburn.
W. J. Turner, Sec'y..... Ashburn.
C. E. Walker..... Sycamore.

*TWIGGS COUNTY.

G. E. Chapman, Sec'y..... Danville.
E. J. Denson ..... Allentown.
I. E. Dupree..... Danville.
T. S. Jones..... Jeffersonville.
E. McNair ..... Jeffersonville.
M. H. O'Daniel..... Bullards.
J. G. Slappy..... Jeffersonville.
W. W. Wimberly..... Adams Park.

UNION COUNTY.

F. J. Erwin. ..... Blairsville.

*UPSON COUNTY.

A. H. Black ..... Thomaston.
G. W. F. Hannah..... Thomaston.
J. W. Herring ..... Thomaston.
G. W. King ..... Thomaston.
J. M. McKenzie..... Thomaston.
J. C. Weaver, Sec'y..... Thomaston.
K. S. Williams..... Thomaston.

*WALKER COUNTY.

M. M. Crowder ..... Cedar Grove.
D. G. Elder..... LaFayette.
J. H. Hammond, Sec'y..... LaFayette.
J. P. Hunter..... Kensington.
J. J. Johnson..... LaFayette.
J. P. McWilliams ..... Greenbush.
C. C. L. Rudicil..... Chickamauga.
J. A. Shields..... Villanow.
J. M. Underwood..... LaFayette.

*WALTON COUNTY.

R. P. Adams ..... Bethlehem.
R. A. Cook..... Social Circle.
J. B. H. Day..... Social Circle.
R. A. Hammond ..... Monroe.
G. P. Hurst ..... Monroe.
J. L. Long ..... Monroe.
O. N. Pendergrass, Sec'y..... Monroe.
J. A. Pirkle ..... Monroe.
J. W. Smith..... Monroe.
W. D. Spearman ..... Social Circle.

I. N. B. Spence.....Social Circle.
D. A. N. Thomas.....Jersey.
G. R. Wells.....Monroe.

*WARE COUNTY.

J. G. Bagley.....Millwood.
L. J. Burch .....Folkston.
A. B. English .....Waycross.
A. Fleming .....Astoria.
F. C. Folks.....Waycross.
G. P. Folks .....Waltertown.
N. A. Frier .....Bickley.
R. P. Izlar.....Waycross.
M. M. Johnson, Sec'y.....Waycross.
J. H. Latimer.....Waycross.
J. E. Lee.....Waycross.
J. K. Maloy.....Beach.
D. H. Meeks .....Nichols.
W. E. Middleton .....Waycross.
J. A. Moore.....Dupont.
T. E. Oden .....Blackshear.
C. R. Oglesby .....Waycross.
J. H. Redding .....Waycross.
J. C. Rippard .....Waycross.
J. E. W. Smith .....Waycross.
S. L. Vincen .....Nichols.
J. L. Walker .....Waycross.
R. M. Ware.....Waycross.
W. P. Williams .....Blackshear.
J. C. Wright.....Folkston.

*WARREN COUNTY.

G. R. Maner, Sec'y.....Warrenton.
R. D. Nash .....Norwood.

W. W. Pilcher ..... Warrenton.
E. G. Scruggs ..... Warrenton.
J. T. Snider ..... Jewells.

*WASHINGTON COUNTY.

D. L. Cheatham ..... Sandersville.
J. B. Dillard ..... Davisboro.
J. H. Evans ..... Davisboro.
L. A. Graybill ..... Oconee.
E. A. Harris ..... Sandersville.
D. C. Harrison ..... Harrison.
H. A. Hermann, Sec'y ..... Sandersville.
G. W. Malone ..... Sandersville.
S. B. Malone ..... Sandersville.
D. E. McMaster ..... Tennille.
L. P. McBride ..... Oconee.
R. L. Miller ..... Tennille.
P. C. Nunn ..... Sandersville.
J. E. Peeler ..... Deepstep.
Wm. Rawlings ..... Sandersville.
C. D. Redding ..... Warthen.
O. L. Rogers ..... Sandersville.

WAYNE COUNTY.

J. G. Tuten ..... Jesup.

WEBSTER COUNTY.

Members of Stewart County Society.

T. F. Harper ..... Weston.
J. M. Kenyon ..... Weston.
J. F. Lunsford ..... Preston.

WHITE COUNTY.

No members.

WHITFIELD COUNTY.

W. E. Wood ..... Dalton.

WILCOX COUNTY.

A. H. Crawford ..... Abbeville.
J. N. Dorminy ..... Seville.
J. T. Gammage ..... Pineview.
Archie Griffin. ..... Luke.
C. D. McRae ..... Rochelle.
J. Y. H. Smith..... Rochelle.

* WILKES COUNTY.

J. E. Amason ..... Washington, R.
Ralph Comer ..... Tignall.
J. J. Hill ..... Washington.
R. J. McNeil ..... Danburg.
H. M. Sale ..... Tignall, R. F. 1
A. W. Simpson, Sec'y..... Washington.
R. A. Simpson ..... Washington.
J. T. Wills ..... Washington.

WILKINSON COUNTY.

E. J. Denson ..... Allentown.
J. H. Duggan ..... Irwinton.
J. D. Thompson ..... Toomsboro.

* WORTH COUNTY.

P. E. Bell ..... Sylvester.
T. J. Bridges..... Sylvester.
L. F. Grubbs, Sec'y ..... Sylvester.
H. M. Jeffords ..... Sylvester.
W. L. Sikes ..... Sylvester.
H. W. Smith ..... Poulan.
J. L. Tracey ..... Sylvester.

2 GAL 318